Aims and Scope
The Korean Journal of Women Health Nursing is a primary source of information for meeting the challenges of providing optimal healthcare for women. The journal aims to be a core resource for cutting-edge advancements and clinical applications of new nursing practice, therapeutic protocols for managing health problems in women, and innovative research on gender-based issues that impact treatment and nursing care.

Its scope includes the latest clinical and research papers on health issues that affect women throughout their lifespan. The emphasis is on clinical nursing practice and education on the social science components relevant to women's health issues. It also includes nursing care, education, and research methodology for ante-, intra-, and post-partum women, middle-aged and elderly women's health, socio-cultural issues, and therapies. Its regional focus is mainly Korea, but it also welcomes submissions from researchers all over the world.

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74 English Corrigendum: Factors influencing prenatal and postpartum depression in Korea: a prospective cohort study
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Childbirth education helps to deliver information regarding health care to pregnant women and their families during the antenatal and postnatal periods. Culturally, Korea has a unique type of childbirth education, termed *taegyo*, which helps in maternal health care and stimulates the cognitive development of the fetus in the womb [1]. In modern society, this tradition continues to be taught in prenatal classes for pregnant women and their families, mainly at hospitals and public health care centers. Prenatal classes play a role in encouraging maternal physical, psychological, and social health through self-care during pregnancy. These classes deliver information on a wide-ranging and deep understanding of the birth process and readiness for the maternal role, and they play a valuable role as a mode for evidence-based nursing care to be shared with pregnant women. In addition to learning about diet, nutrition, vaccination, exercise, rest, activity, the birth process, pain control during labor, breastfeeding, and practical approaches to daily activities, pregnant women gain emotional benefits through communication between educators and pregnant women. Childbirth education enhances parental attachment, motherhood, confidence, and childbearing efficacy, and it relieves psychological distress and the postpartum blues [2].

Although birth education is important for pregnant women, the coronavirus disease 2019 (COVID-19) pandemic changed the social atmosphere and culture, especially in the field of health-related education [3]. Face-to-face education was curtailed in Korea because of social distancing and quarantine. Birth education has also been limited in order to avoid personal contact in the past 2 years since COVID-19. Pregnant women have lost educational opportunities to obtain knowledge, have appropriate attitudes reinforced, and develop the necessary skills for healthy pregnancy and birth because many birth classes have been shut down. Even when a birth class is open, only a limited number of pregnant women can participate in on-site education because of governmental quarantine rules. The strengthened social distancing regulations to prevent the spread of COVID-19 permit private gatherings of only up to four people nationwide in Korea [4]. Gradually, midwives, nursing educators, and medical staff have tried to provide remote birth education.

However, this leads to an important question: can remote birth education be an acceptable substitute for face-to-face birth classes? Some insights into this question are offered by recent studies, such as a systematic review and meta-analysis of nine randomized controlled articles on internet-based prenatal education interventions, which found interventions delivered via online reduced maternal depression [5]. Internet-based education is defined as the delivery of organized educational content between educators and learners using computer networks, and it is characterized by interactive
communication, self-learning, and tutoring. Remote education, e-learning, and distance education are used as types of internet-based education to substitute for face-to-face learning as needed. Terminology on such modes of communicating information includes internet-based education, online education, mHealth, teleHealth, social networking services, social messaging services, kiosks, and animations [6]. Virtual reality, augmented reality, mixed reality, and game-based intervention, collectively termed the “metaverse,” have emerged as educational techniques to immerse learners in educational content [7]. A game-based decision aid for prenatal education has also been found to be effective for enhancing prenatal screening [7].

The advantage of these modalities for the educator is that they are cost-effective and have a high ripple effect since the content is delivered to a large number of people. These methods can deliver standardized and high-quality education [5]. From the learner’s point of view, visual information such as photos and videos can be more easily understood than text information. Learners showed high levels of understanding, acceptance, adaptability, and feasibility [6]. In addition, learners do not need transportation or child care, can use these materials at a convenient time according to their schedule, and can save time [6]. Therefore, internet-based education, which has advantages in terms of time and space, can be an effective alternative in the COVID-19 situation, which has necessitated social distancing.

However, efforts to implement internet-based education should aim to overcome the unintended inequalities of technical development, which have been characterized as a double-edged sword. Firstly, smart devices are not common equipment and there are financial and local disparities in internet access. Childbirth educators should pay careful attention to vulnerable pregnant women when they plan birth education via an internet-based intervention. Internet literacy should be considered and internet-literacy education may have to precede birth education. Policymakers can narrow the gaps of information disparities in the context of the pandemic era [3]. Therefore, childbirth educators can make proposals to policymakers and stakeholders regarding ways of preparing educational techniques that involve the delivery of information through the internet. In particular, these efforts should carefully consider susceptible and minor pregnant women (including those with limited internet literacy), pregnant women from multicultural backgrounds, socioeconomically vulnerable women, and pregnant women who have illnesses, with the goal of ensuring that they can benefit from these new types of interventions.

Secondly, the quality of internet-based education can be improved and strengthened through active participation of childbirth educators, who encourage pregnant women through social support. Face-to-face education includes communication and natural social chemistry between learners and educators. However, it is easy for internet-based interventions to lack such supportive interactions. Therefore, childbirth educators should actively engage with and support pregnant women via social networking services, offering counseling, coaching, and question-and-answer sessions during education. Given that the pandemic situation has limited pregnant women to remain at home and has affected their mood [8], childbirth educators should place a particular emphasis on caring for maternal mental health, such as depression, anxiety, and other aspects of psychological wellbeing.

Lastly, pregnant women are often worried both about COVID-19 infection and the negative effects of vaccination, with the goal of avoiding the risk of harm to fetal health. The low acceptance rate of COVID-19 vaccination and the possibility of the low planning for parenthood in the last 2 years have underscored the importance of unanswered questions regarding safety for maternal and fetal health [9]. A recent study in which 539 pregnant women participated found no significant differences in the rates of short-term side effects after vaccination [10]. However, more evidence is necessary for the long-term outcome of maternal and infant health, including the breastfeeding and postpartum periods. Childbirth educators play a role in providing cutting-edge knowledge about the pandemic and research about maternal knowledge, beliefs, attitudes, values, and skills of self-care during pregnancy in the context of the COVID-19 pandemic. This suggests that childbirth educators exert a special influence on maternal and infant health through their valuable support.

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All work was done by Kim HK.

Conflict of interest

Hyun Kyoung Kim has been associate editor of the Korean Journal of Women Health Nursing since January 2022. She was not involved in the review process of this editorial. Otherwise, there was no conflict of interest.
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Toward new health and welfare policies to overcome low birth in Korea

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Introduction

In the population policy of South Korea (hereafter, Korea), suppression of population growth was first introduced in 1961, in line with the First Five-Year Economic Development Plan (1962–1966). However, in response to the opinion that continuous implementation of this suppression policy would not be conducive to socioeconomic development in the long term, it was abolished in 1996 and the direction of the population policy was changed to a focus on population quality and welfare policy [1]. After setting low fertility and aging society on the national agenda in 2003, Basic Plans were established and promoted over the years: the First Basic Plan on Aging Society and Population (2006–2010), followed by the Second (2011–2015) and the Third (2016–2020) Basic Plans [1,2]. Despite such an explosion of policies to encourage childbirth over the past 15 years, however, the outcome was below expectations. Because only a few households were willing to give birth with financial support, the effectiveness of the policy was only temporary, and there was a limit to a sustainable increase in the birth rate over the long term. Similar patterns have occurred in East Asian countries such as Japan, Taiwan, and Hong Kong, in terms of low birth rate and limited impact of policies aimed to increase it [3].

Concerns over population decline are growing serious in Korea, as the total fertility rate—the average number of children that would be born to each woman over her lifetime—stood at an all-time low of 0.81 in 2021, a further drop from 0.84 in 2020 [4]. In response to these concerns, the paradigm of the low fertility policy has shifted from encouraging fertility per se to improving quality of life, i.e., focusing on the social structural ‘causes’ that led to low fertility and seeking to resolve them to improve overall quality of life [4]. This paper will review causes of low birth rate and new policies toward “improving quality of life” outlined in the Fourth Basic Plan (2021–2025), and make suggestions for the successful implementation of the policy.

Causes of low birth rate in Korea

Korea’s total fertility rate marked the fourth straight year (2018–2021) of a rate below 1%. Furthermore, in 2019 the first natural decline in population was reported, as the number of deaths outpaced that of newborns [5], and subsequently concerns over population policy are deepening. Several factors have been posited to explain the persistence of low birth rate in Korea. Socioeconomic factors...
include large gaps and gender discrimination within the labor market, increasing competition in education, expensive housing prices, and burden to child-rearing families due to lack of child care support. It is difficult for young people to find a stable and secure job in terms of full-time work with adequate salary. Korea's labor market structure with gender discrimination exists in terms of employment rate, wage level, and job quality is also one of the causes. This precarious labor market causes intensifying competition in education. In addition, the burdens of housing and education expenses, lack of child care, and a system that is not employee-friendly become obstacles for married dual-income couples to consider having children [2,4-6].

People's values toward marriage and children has changed over the years and life priorities have shifted from marriage and children to work in Korea's younger generation. A recent survey of young Korean adults in their 20s to 30s [7] found that their life perspective is becoming de-gendered, i.e., both men and women reported the importance of their life tasks in the following order: work taking highest priority, followed by personal life, partnership, and children. Women are designing their life course centered on a 'work-centered life' rather than a 'family-centered life', although there was no significant difference between young women and men of the same age. This survey also reported that young Korean men feel pressured with work and precarious living conditions, as much as women do; nevertheless, men were also supportive of the prospect of participating in nurturing.

Ultra-low fertility is a serious issue, not only in Korea, but also in several East Asian countries, which has been attributed to gender inequality [3]. Difficulty reconciling work and family life in Korean society are major obstacles and career interruption due to childbirth and child-rearing prevents both women and men from having a stable working life. The difficulty in balancing childbirth/parenting and maintaining a dual-income life, subsequently presents as both men and women tending to avoid marriage and childbirth. When examining a list of what young Koreans perceive as prerequisites for having children, women showed the highest degree of agreement with 'partner's participation in child-rearing,' 'fair household burden,' and 'spouse's maternity and parental leave,' which ranked higher than economic stability or the woman's own sense of work-family balance. It shows a big difference from men who mainly responded based on economic requirements [7].

The economic crisis and the coronavirus disease 2019 (COVID-19) pandemic have also impacted a further decrease in birth rate. For example, there are serious problems of inequality in employment, increasing demands for expanding social safety nets, and a vacancy in childcare options due to temporary suspension of childcare centers and schools because of concerns about the spread of COVID-19 infection [8].

New policies toward "improving the quality of life" with the Fourth Basic Plan (2021–2025)

The social shifts described above strongly suggest that rather than focusing on birth rate per se, the focus should be on improving the quality of life of the younger generation in their 20s to 40s, who are planning marriage and considering having and raising children. The Korean government announced the Fourth Basic Plan (2021–2025) in December, 2020 [4]. The vision of this plan is creating a "sustainable society where all generations are happy together" with three main goals: improving individual quality of life, establishing a gender-equitable and fair society, and social innovation in response to demographic changes. Four strategies are outlined as follows: (1) creating a society where we work together and care for each other, (2) building a healthy and active aging society, (3) establishing a society where everyone's capabilities are recognized, and (4) adapting to leap forward in response to demographic changes [6].

To this aim, the Korean government launched the 'Five major packages for overcoming the low birth rate' to ease the burden of pregnancy, childbirth, and child care [4]. The five packages include providing infant allowance, a 'first meeting' package, expansion of multi-child support, activation of parental support for couples, and expansion of public childcare centers. The first package offers intensive support from pregnancy to early childhood, with government subsidies of 300,000 Korean won (KRW; approximately 240 US dollars) per month for infants from birth to 1 year of age starting in 2022. This infant allowance will be raised in stages up to 500,000 KRW (approximately 400 US dollars) by 2025. Second, a 'first meeting package' worth 3 million KRW (approximately 2,700 US dollars) is given to families who have given birth. Third, multi-child support is extended from 'third child or more' to the second child and discounts are available on childcare, education, housing and travel costs. The fourth package seeks to establish a comprehensive and high-quality care system people can trust in with confidence, such as expanding public childcare and after-school day care. The final package aims at strengthening work-life balance, such as increasing payment levels for parental leave and flexibility in working hours, and more investment in the well-being of families. This focuses on strengthening systems not only for financial support
and policy, but for childcare services as well. In addition, the basic plan includes the task of ‘institutional acceptance of diverse families’ into the ‘adaptation to demographic change’ area. As such, respect for family diversity is presented as a major future-oriented task.

**Suggestions for successful policy implementation**

The declaration that the Fourth Basic Plan will move from a “national-centered perspective” toward “individual quality of life” is judged to be a very important and meaningful policy paradigm shift [2,6,9]. Nevertheless, there may be limitations in responding to the issue of low birth rate itself, as most support policies are focused on married families planning to have or raising children. There is a need for policy to pro-actively aim at resolving imbalances in the labor market by expanding the supply of high-quality jobs for the young unmarried generation to have stable employment; and reducing distortions in the cost structure that has heavily focused on housing and education [10]. Policies should include strategies for accommodating economic and social environmental changes and adapting to the expected future demographic changes.

As an explanation for the second-half of the gender revolution, Goldscheider et al. [11] proposed that men’s participation in caring roles and a greater change in the perception of gender equality would lead to an equal partnership and a change in the fertility rate. Given that both Korean young men and women overwhelmingly support the gender equality model regarding the division of labor between work and family [7], the Korean government should support a gendered perspective. Further, young Korean women are more sensitively aware of the need for family-inclusive systems and reproductive rights [7]. This is similar to the report that the social structure and institutions in all dimensions from work to life should be rebalanced toward attaining higher quality of family life, which is hoped to lead to higher motivation to have children [10]. As such, new policy approaches need to incorporate these life perspectives for pursuing a gender-equitable society and improving quality of life for everyone.

A large proportion of young Korean women surveyed agreed with the need for safe contraception and abortion support [7]. The Fourth Basic Plan includes sexual and reproductive rights and set three subtasks with comprehensive guarantee of sexual and reproductive rights, lifelong reproductive health management and disease prevention, and guarantee of healthy and safe pregnancy and childbirth [6]. Although it appears to be freeing itself from excessive focus on the ‘birthing body,’ the plan did not include women’s overall reproductive health problems nor the right not to have children [6,9,12]. Given these limitations, policies on expanding support for women’s bodies need to be added in the future.

While housing is one of the barriers to marriage and childbirth for the young generation and newly married couples, strategies to address this are still limited [6,13]. Therefore, future efforts should establish a policy for housing cost assistance, such as public rental housing that meets the needs of young people, through cooperation among various government ministries.

In conclusion, it is necessary to shift the focus from the national point of view that low birth is a problem, to the individual point of view that values and enhances quality of life, so that the prospect of having and raising children can be naturally supported. Ongoing challenges for the Korean government include designing and implementing effective, efficient, integrated, and long-term policies based on needs analysis. The new government, which will be launched in May 2022, following the 15th Presidential Election, pledged to abolish the Ministry of Gender Equality and Family, amid many concerns [14]. However, the new government-elect should make efforts through inter-ministerial policy coordination to ensure that diverse population policies for gender equality continue without setbacks.

To solve the problem of low birth rate in Korean society, (1) the social perception that women bear main responsibility for childbirth and child rearing needs to be changed, (2) the burden of childcare should not be shifted solely to the individual/family, and (3) low fertility should not be approached as an individual problem, but a social problem that the nation must respond to. When individuals, families, workplaces, and communities all develop into a gender-equitable society that fully supports work-family balance, members of society will be able to choose marriage, childbirth, and child rearing while pursuing a high quality of life. Nurses should highlight their competence as healthcare professionals by actively participating in the latest policy proposals and projects to overcome the low birth rate. In addition, nurses can actively participate in the establishment of policies on women’s reproductive rights and raise their voices as advocates for women’s right to health.

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Concept analysis of transition to motherhood: a methodological study

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**Purpose:** Although the term “transition to motherhood” is commonly used in research, the concept is not clear. This study, hence, was conducted to clarify the concept of “transition to motherhood.”

**Methods:** The concept analysis framework developed by Walker and Avant is used to analyze the concept of transition to motherhood.

**Results:** Transition to motherhood is defined as the physical, psychological, social, and relational (mother-baby relationship/interpersonal relationship) changes that happen to a woman after pregnancy and delivery of a baby. The attributes of the transition to motherhood include: 1) adapting to physical changes after pregnancy and childbirth; 2) experiencing various psychological changes; 3) changing of her social perception from being a woman to someone’s mother; and 4) forming and developing a relationship with the newborn, adjusting priorities, and redefining the relationship between family and others. Meeting the newborn is regarded as an antecedent of the transition to motherhood. Redefining identity and physical image, ensuring mother’s well-being, maternal attachment, and confidence in the maternal role are regarded as consequences of the transition to motherhood. The concept was clarified by the presentation of model, borderline, and contrary cases.

**Conclusion:** The significance of this study lies in the clarification of the concept of transition to motherhood and defining its attributes. It is recommended that tools be developed to measure transition to motherhood based on the results of this study. Furthermore, nurses and midwives can use study findings to better understand the concept of transition to motherhood in providing care and support to mothers who experience it.

**Keywords:** Adaptation; Concept analysis; Mothers; Transitional care

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**Introduction**

Motherhood is a state in which one experiences maternal roles [1]. It has a strong intrinsic meaning for women, such as the qualities and values of a mother, and goes beyond mere fertility [2]. Women's motherhood transits through the stages of pregnancy, birth, and after birth [3]. During this transition, mothers report confusion due to their first experiences [4] and require a new adaptation at the physical, cultural, and social levels.

Past research has focused on the acquisition of motherhood [5,6]. Rubin [5] stated that motherhood acquisition is a part of the transition to acquiring maternal identity. Theories related to maternal identity and its acquisition were developed and tested in the 1950s and 1970s. However, these studies failed to reflect social changes such as the women’s movement and civil rights movement in the late 1960s [7]. As such, recent research deals with motherhood in a broader perspective, including women becoming mothers, bonding with the newborn, adapting to their role as a mother, and considering their roles in social contexts [8,9].
The term maternal transition is also used to mean a process that emphasizes the concept of the transition period to acquire maternity [10,11] or a goal or result to be achieved through motherhood [3,12]. The definition of the transition period to motherhood has varied from conception to postpartum, depending on how researchers have applied the concept [9,13]. Therefore, the term has been used interchangeably with antecedent factors (e.g., an encounter between a woman and child) and/or consequences (e.g., mother’s wellbeing, confidence in role performance) of the transition to motherhood, without a clear definition. Consequently, a clearer definition of transition to motherhood is required.

To date, studies related to the transition to motherhood have mainly focused on the psychological dimensions of pregnancy and giving birth [14,15]. Additionally, studies have dealt with attachment and bonding with children rather than the mother as the focal point [16,17]. In nursing studies, the transition is defined as a movement or process from one level of life to another, including changes in various dimensions such as identity, role, relationship, behavior, and ability [18]. Therefore, this study aimed to analyze and synthesize the concept of transition to motherhood across these various dimensions.

Concept analysis clarifies the meaning of an ambiguous notion and provides a clear operational definition by defining the concept and identifying its properties [19]. Walker and Avant’s [20] concept analysis method is widely used to clarify the meaning of existing concepts and develop operational definitions. As concept analysis helps to clarify nursing terms that entail unclear original meanings, it can be applied to nursing diagnosis and tool development [19]. Also, a clear concept of transition to motherhood can help nurses better understand women in the maternal transition period and enable them to provide advanced nursing care that can assist the transition process. As such, concept analysis can support providing care for women who are experiencing the transition to motherhood, conducting continuous research focusing on the concept of transition to motherhood, and facilitate effective communication between people who use the concept. Therefore, this study aimed to systematically identify the antecedent factors and consequences of the process of transition to motherhood and confirm its attributes.

**Methods**

**Ethics statement:** This study was exempted from approval by the Institutional Review Board as it is a review of the literature using previously published studies.

**Study design**

This methodological study conducted a concept analysis of the transition to motherhood by applying Walker and Avant’s [20] method through a literature review.

**Literature search and analysis**

To understand how the transition to motherhood is used in literature, the following databases were searched from March 19 to April 15, 2021: the Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, PubMed, Web of Science, Research Information Sharing Service (RISS), and Data-Base Periodical Information Academic (DBPia). For the search, keywords “maternal transition” and “transition to motherhood” were used. Published studies were limited to between 1999 and
2020 in the literature search, only Korean and English articles were examined, and gray literature and conference abstracts were excluded. The search initially found 1,005 titles, and 451 duplicated articles were excluded. After screening titles and abstracts, 60 articles were extracted that were considered appropriate to define the concept or explore the essential meaning of transition to motherhood. For these 60 articles, full texts were reviewed, and 27 articles met the inclusion criteria (Supplementary Table 1 [3,7-12,20-39], Figure 1).

To minimize subjectivity and ensure reliability, three researchers independently searched the literature to confirm the consistency of the search results and reached a consensus on which articles were to be included. Walker and Avant’s [20] concept analysis framework was applied to determine the scope of analysis, identify defining attributes, and propose a definition.

Results

Scope of use of the concept

Dictionary definition

There was no dictionary definition of “transition to motherhood,” so before considering the definition of ‘transition to motherhood’ in this study, the dictionary meanings of “transition to motherhood” and “transition” were examined. The Cambridge English Dictionary [40], defined “motherhood” as the fact or state of being a mother and “transition” as a change from one system or method to another, often a gradual one. Therefore, in this study, “transition to motherhood” was defined as the process of a woman becoming a mother.

Use of the concept in other disciplines

We reviewed the use of transition to motherhood in medicine, psychology, and women’s studies to confirm the concept in other disciplines. In the medical field, transition to motherhood was defined as a process that includes adaptation to a new stressor, physical pain, lactation, and attachment [21]. These processes were seen as dependent on the secretion of oxytocin, which starts from childbirth to the postpartum period, and plays a role in relieving maternal stress responses, supporting positive emotions, and regulating maternal behavior [21].

In psychology, the transition to motherhood involved the physical and internal changes that women acquire as mothers, which redefine their place in the sociocultural structure [8]. It is a phrase that is marked with physiological, social, and cultural changes [8]. Psychology defined the period from birth to one year as the period of maternal transition [22].

In women’s studies, transition to motherhood is defined as a dynamic, diverse, and complex process rather than a naturally ingrained, stable, and fixed process and should be interpreted within historical, cultural, social, economic, and political contexts [9]. Furthermore, transition to motherhood is a concept that includes pregnancy, childbirth, nurturing, work, leisure, and economic activity, and is defined as a period of redefining self-identity and undergoing biological changes for a woman [9,41].

Use of the concept in nursing

Nursing views transition to motherhood as a process of personal or interpersonal change that occurs when a woman assumes the role of a mother and evaluates herself as a mother [42]. It also considers the woman’s experiences while becoming a mother after childbirth [42] and is defined as the process of change and adaptation [23]. The term “transition to motherhood” was first
used by Rubin [5] and was defined as a series of developmental processes in which a woman learns maternal roles and develops maternal identity during pregnancy and childbirth [5,43]. Mercer [44,45] further explained that becoming a mother is an intellectual process of recognizing the identity of a mother, acquiring the maternal role, and ultimately becoming a mother. In 2004, Mercer [45] defined maternity as a broad-scale transformation process from being a woman to a mother, through personal integration by restructuring reality, rather than simply acquiring it, and recommended that the term maternal acquisition be withdrawn. Roy [46] interpreted maternal transformation as an adaptation based on adaptation theory and viewed it as a process of adapting to changes that come with the commencement of the mother’s role, along with changes in relationships, ability, and behaviors after childbirth [24]. It is interpreted as a concept that includes physical and psychological changes from pregnancy to postpartum [25,47]. Moreover, the transition to motherhood is viewed as a period in which women change their perception of themselves [26,48] and interpret the transition as a process of forming a new identity [26]. Therefore, change to maternal identity in nursing can be defined as a process of adaptation to becoming a mother, as a woman plays the role of a mother and establishes an identity during her pregnancy and the postpartum period.

Considering the concept of transition to motherhood as described above, physical, sociocultural, and economic dimensions of maternal transformation were identified, while in nursing studies, it appeared to mainly focus on the adaptation to motherhood. However, considering that women’s social activities are increasing socioculturally and that the transformation process includes changes in multiple dimensions such as identity, roles, and relationships [18], it is necessary to define and clarify the concept of transition to motherhood in a wider range of dimensions, including social and relational aspects.

Defining attributes and proposed definition

**Defining attributes of transition to motherhood**

Attributes are the key characteristics that simultaneously appear with the concept [49]. From the literature surveyed for this study, the concept of transition to motherhood was defined or used as follows:

- A significant event in a woman’s life, that requires adjustments on physical, biological, psychological, cultural, and social levels [49]
- A process of response and adaptation that changes according to an individual’s continuous assessment of a situation [23]
- Transformation process of the self through complex physical, cognitive, behavioral, and emotional changes [26]
- A woman’s reactions to the concrete physical changes [27]
- A changing conception of self as related to others [28]
- Integrating the role of a mother into her sense of self and forming a relationship with her infant [22]
- A dialog between internal and external positions, where internal positions are perceived as part of oneself and external as part of the environment [8]
- Forging a new identity by a woman as a mother, that revolves around her functioning in a new role [29]
- Process of personal or interpersonal change that occurs by taking on the role of a mother and evaluating oneself as a mother [23]
- A stressful experience, generating a sense of loss in terms of autonomy, time, appearance, and occupational identity [30]

**Proposed definition of transition to motherhood**

Based on these attributes, transition to motherhood is a continuous process of adapting to and responding to constantly changing physical, psychological, social, and relational dimensions, from being a woman to becoming someone’s mother (Table 1).

**Case examples: model case**

The following model case illustrates the concept of transition to motherhood, while demonstrating all the defining attributes [20]. ‘M’ is a 35-year-old woman who became pregnant 3 years after marriage. M’s weight increased by 20 kg, and she had morning sickness throughout her pregnancy. A week had passed since childbirth, but she did not lose weight as quickly as expected. Every 3 to 4 hours, she experienced breast engorgement with breastmilk leaking. Although there were difficulties with these physical changes, she expected all these as she had heard about them from the nurse at discharge education. She adapted physically without much difficulty thanks to the advice from the

<table>
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<th>Table 1. Proposed definition of transition to motherhood</th>
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<td><strong>Dimension</strong></td>
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https://doi.org/10.4069/kjwhn.2022.01.04
nurse and help from online community peers who experienced childbirth recently (physical dimension). The posture of holding and breastfeeding a newborn was initially uncomfortable, and even when changing diapers or bathing the baby, she was cautious and clumsy in handling the baby. She felt incompetent and there was nothing she could do. However, as the days went by, she gradually got used to it and gained confidence; she felt happy to see her baby growing daily (psychological dimension). In comparison to being called by her own name as before, after birth she is now called “Jane’s mother” or “mommy” and did not call her by her own name (social dimension). However, seeing her newborn completely dependent on her, she felt that her existence was necessary and felt proud and infinitely happy to be a mother (mother-newborn relational dimension). M and her husband loved each other passionately and put each other first. However, since the birth of their baby, they were no longer the priority for each other. Initially, both the husband and M felt awkward and some sadness, but as time progressed, they felt a sense of happiness in their new family relationship (interpersonal relationship).

As seen in this transition to motherhood, M faced difficulties in the early stages of the transition to motherhood but gradually adapted to and overcame them.

**Developing additional examples**

**Borderline case**

As a borderline case including some important attributes of the concept [20], the following is presented:

‘B’ is a 17-year-old high school student who became pregnant and dropped out of school. B gave birth by cesarean section 4 days ago and is currently recovering. After giving birth, B became aware of the physical changes, such as secretion of breastmilk and surgical scarring in her body that was brought on by motherhood. Upon seeing the bloody lochia, B felt upset as she thought that she was sick (physical dimension). B was afraid of these changes in her body, so she asked the nurse and was relieved to hear the nurse explain that these changes were a normal process. B also felt joy in the fact that the painful process had ended and that she could return to the life before pregnancy. However, she felt sad that she now has a surgical scar on her body (emotional dimension). At the time of breastfeeding, B felt confused when the nurse called her “Jane’s mother” or “mommy” and did not call her by her own name (social dimension). Additionally, during breastfeeding time, all the attention and affection of her boyfriend and her parents were toward the newborn. B also felt that the nurse was only interested in the baby’s condition during breastfeeding and was indifferent to her feelings and changes, which made B feel alienated and jealous of her baby. Thus, she felt that she is no longer a priority and felt irritable returning to life as before no longer was possible.

This case contains the physical, psychological, and social attributes of the transition to motherhood, where B was aware of her physical and psychological changes (physical and psychological dimension) and also was recognized and referred to as a mother by those around her (social dimension). However, she failed to form and develop a relationship with her newborn and had not reconstructed her relationship with her boyfriend as parents. Thus, this is an example in which the properties of the relational dimension of transition to motherhood are excluded.

**Contrary case**

A contrary case is a clear example of something that is not a defined concept, which does not contain any of the important properties of the said concept [20], as illustrated in the following case:

‘C’ is a 32-year-old woman who has been married for 5 years, as well as a working woman who exercises every day, takes care of herself thoroughly, and is recognized at work. Over the past year, she had been desperately wanting a baby and had undergone artificial insemination and in vitro fertilization several times but failed. After long consideration, C adopted a 3-month-old girl and decided to raise her well. During the daytime a babysitter cared for the baby, and C spent time with the baby after work. However, C became increasingly tired and overwhelmed as she watched the baby cry constantly. Despite trying to figure out why the baby was crying, her efforts were in vain and she grew to resent the baby. She told her husband that raising a child was not easy and that she had found it difficult, but instead of consoling and offering support, he said that it was her choice and that she should do her best in the role. C thought that she would be happy when she had a baby, which she so desperately wanted; however, she increasingly disliked the baby and thought it was because the child was not hers biologically. Her sense of burden in caring for the baby became heavier over time, in contrast to the respect she enjoyed at work. Therefore, she worked hard to build her career without caring for her daughter after work hours. One day, the child continued crying for no apparent reason and she took her to the emergency room. The nurse asked her about the baby, but she could not answer the question properly because she could not figure out the meaning of her daughter’s usual crying. She felt so exhausted and miserable at the thought that she could do nothing as a mother, and grabbing the nurse, cried.
In this case, the attributes of physical, psychological, social, and relational dimensions are not included in C’s transition to motherhood.

**Antecedents and consequences of the transition to motherhood**

**Antecedents**

As defined in this study, an encounter between a woman and a baby must precede the transition to motherhood. Through pregnancy and childbirth, a woman recognizes her baby by interacting with the fetal movements, and through morning sickness and delivery process. The mother goes through a process of adaptation at the physical, psychological, social, and relational levels. This is similar to previous studies which emphasized that the birth of a baby is essential for maternal transformation [8] and that transition to motherhood proceeds through pregnancy and childbirth [25,43]. Furthermore, even in an adoption situation, maternal change can occur as women adapt to maternal role and overcome difficulties [41]. To bond with the newborn during the transition to motherhood, women need coping strategies, caring skills [27], and support from family members and partners [25].

**Consequences**

As a result of the transition to motherhood defined in this study, women integrate and balance their roles as an independent person and as a mother. Consequently, the woman forms a relationship with her baby, takes on the maternal role, reshapes her identity, and generally adapts soon after pregnancy and childbirth. Additionally, by redefining relationships with others and adjusting priorities, she adapts and grows while balancing social and maternal roles. As women undergo maternal changes, it eventually leads to a new definition of body image and identity [8].

Women who experience difficulties in this process face challenges recognizing themselves as a mother, thus perceiving their baby negatively [23]. Consequently, the newborn’s growth and development are negatively impacted, and they have difficulties in forming attachments [50]. It can cause women to experience negative emotions such as depression, helplessness, and guilt about not being able to master the role of a mother properly [27].

Alternatively, however, if the transition to motherhood is successful, women gain confidence in performing the mother’s role, thus improving their sense of efficacy as a mother [27]. This helps form bonding with and attachment to the baby [8,9] and positively affects physical, socioemotional, language, and cognitive development [51,52]. Additionally, through a successful transition to motherhood, women can develop their maternal behavior and continue to grow [51], which ultimately has a positive effect on the well-being and mental health of mothers, and subsequently, the newborn [8,9].

**Empirical indicator**

An empirical indicator refers to an observable index that defines the properties of a concept [20]. For the psychological dimension, the Differential Emotions Scale [53] was used in a study by Behringer et al. [54] to measure women's emotions over time. The scale includes 10 basic emotions during pregnancy or childbirth, such as joy, sadness, fear, and anger. Mortazavi et al. [55] used the General Health Questionnaire-28 (GHQ-28) [56] to investigate the psychological status of women in the 3rd trimester of pregnancy and 8 weeks after childbirth. The sub-items comprise four themes: (1) physiological symptoms, (2) anxiety and insomnia, (3) social dysfunction, and (4) severe depression. This tool measures negative psychological states and is widely used to measure the psychological dimension involved in transition to motherhood.

![Figure 2. Conceptual structure of transition to motherhood.](https://doi.org/10.4069/kjwhn.2022.01.04)
the transition to motherhood [52,57]. However, it is limited in measuring the overall psychological changes of women during pregnancy or after childbirth, including positive psychological states. An additional limitation of GHQ-28 is that although it includes the psychological state in the physical and social dimensions, it does not include relational dimensions. In contrast, for the relational dimension, the Prenatal Attachment Inventory [58] has been used to measure mother-baby bonding. This tool is widely used to measure the relational aspects of mother and baby, and is evaluated to have high validity [59]. However, it was difficult to find a tool to measure the interpersonal aspect of the relational dimension.

As seen through the above tools, only some attributes of transition to motherhood have been measured in previous studies [55,60]. To confirm the empirical indicator for transition to motherhood, it is necessary to develop a tool that can comprehensively evaluate all the dimensions of attributes of the concept. Based on synthesis of the concepts used in previous studies to measure the transition to motherhood, the following empirical criteria should be considered: body image, psychological response related to pregnancy and childbirth, quality of life, maternal identity, self-awareness, ego-identity, attachment, bonding, maternal efficacy, parenting confidence, parenting burden, and spousal support.

Discussion

This study aimed to systematically identify the antecedent factors and consequences of the concept, transition to motherhood.

Among the attributes of transition to motherhood confirmed in this study, the psychological dimension includes simultaneously feeling different emotions during the transition to motherhood. In previous studies, when measuring the psychological dimension, negative emotions such as depression [29] and worry [32] were mainly addressed. However, it is necessary to consider that various positive and negative emotions can coexist in the psychological dimension of the transition to motherhood.

In some studies, the period and timing of maternal transition were mostly defined as the period from pregnancy to the first year after childbirth [9,13]. The transition period is not defined as a continuous occurrence throughout life [8,23]. Therefore, the period of transition to motherhood confirmed in this study is a period that occurs intensively in the early stages after childbirth. Subsequently, it can be regarded as a process of continuous adaptation and reaction as the newborn grows.

The antecedent for the transition to motherhood derived from this study was the encounter between the mother and the baby. Most studies on the transition to motherhood have been conducted on mothers who have undergone pregnancy and childbirth [9,49]. However, given that social change influenced by modernization has influenced maternity to be viewed as a sociocultural composition, rather than a biological one, it is necessary to include adoption in the discussion of maternal transformation [31,61]. Thus, it is important to understand that the encounter with a baby as a leading factor in this study occurs in the relational exchange between the mother and baby, rather than focusing only on biological pregnancy and childbirth.

The consequences derived from this study were a redefinition of body image and identity, mother’s well-being, formation of attachment, change of priorities in relationships, and confidence in role performance. This implies that motherhood is not limited to a specific dimension, such as the physical or psychological dimension, but is a multidimensional total adaptation. Unlike previous studies that focused on the baby, such as attachment felt towards the baby, this result draws attention to the multidimensional characteristics of women’s adaptation and their sense of well-being as a mother. Through this, the woman integrates and balances herself, both as an individual and as a mother.

In conclusion, the concept of transition to motherhood in previous studies was focused on the mother’s role in delivering and caring for her infant. Moreover, the focus was on the infant, such as attachment to and the skills required to care for the infant. In this study, however, four attribute dimensions were identified: 1) the physical dimension, which is the process of adaptation to the changing body after pregnancy and childbirth; 2) the psychological dimension, which is the process of experiencing various positive and negative psychological changes, such as joy, fulfillment, anxiety, helplessness, and loneliness; 3) the social dimension, which is the process of changing the social perception from being a woman to being someone’s mother; and 4) the relational dimension, which is the process of forming and developing relationships with the baby, and redefining relationships with family and others.

This study confirmed that in addition to being a mother, the woman experiences and adapts to multidimensional changes during pregnancy and after childbirth. Therefore, nurses and midwives can build on understanding the changes in physical, psychological, social, and relational aspects experienced by women in the maternal transition period and provide nursing care according to these various dimensions. Consulting and continuously providing advice on the various aspects of transition that women experience after childbirth may promote women’s successful transition to...
motherhood. This study is significant as it provides basic data for providing holistic nursing by clearly establishing the concept of transition to motherhood. Given that this is limited to review of the literature, future studies that explore and determine whether the attributes of the transition to motherhood identified in this study reflect women’s actual experiences, will be beneficial. Moreover, by reflecting on these identified attributes and empirical indicators of maternal transformation, we propose a future study to develop a tool for measuring the transition to motherhood and nursing interventions to help mothers successfully transition to motherhood.

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Supplementary materials

Further details on supplementary materials are presented online (available at https://doi.org/10.4069/kjwhn.2022.01.04).

Authors' contributions

Conceptualization, Formal analysis, Writing–original draft, Writing–review & editing: Hwang W, Choi S, An H.

Conflict of interest

The authors declared no conflict of interest.

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Data availability

Please contact the corresponding author for data availability.

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14. Cronin-Fisher V, Parcell ES. Making sense of dissatisfaction during the transition to motherhood through relational dia-


Do parenting stress, work–family conflict, and resilience affect retention intention in Korean nurses returning to work after parental leave?: a cross-sectional study

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Purpose: This study investigated whether parenting stress, work-family conflict, resilience affect retention intent in Korean nurses returning to work after parental leave.

Methods: The participants in this study were 111 nurses recruited from 10 hospitals in Korea, who were working after formal parental leave from their hospitals. Collected data were analyzed using descriptive statistics, the t-test, analysis of variance, the Mann-Whitney U-test, Pearson correlation coefficients, and hierarchical regression.

Results: Retention intention (33.80±7.78), parenting stress (101.70±17.57), and resilience (85.02±12.75) were at greater than moderate levels and a midpoint level of work-family conflict (29.63±7.00) was noted in this sample of mostly women nurses in their 30s. The factors affecting retention intent were parental leave duration, the number of times that participants had taken parental leave, health condition, work-family conflict, and resilience. The total explanatory power of these variables was 36.7%. Retention intent had a negative correlation with parenting stress and work-family conflict. Conversely, retention intent was positively correlated with resilience.

Conclusion: This study supports the need for flexible adjustment of returning nurses’ working hours and family-friendly policies to promote balance between work and family. It is also necessary to develop and apply measures that boost resilience and support health improvement for nurses returning to work. As nurses are often assigned to new areas of work upon return, training programs to aid their adjustment may also be helpful.

Keywords: Conflict; Parental leave; Resilience; Retention; Stress

This article is based on the master’s thesis of the first author (Young-Eun Jung) from Inje University.

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Introduction


Methods

Ethics statement: This study was approved by the Institutional Review Board of Inje University (2020-10-003-001). Informed consent was obtained from the participants.

Summary statement

• What is already known about this topic?
  It has been confirmed that parenting stress, work-family conflict, and resilience affect retention intent in nurses. However, little is known about nurses who return after parental leave in Korea.

• What this paper adds
  Parental leave duration, the number of times a nurse had taken parental leave, health condition, work-family conflict, and resilience were associated with retention intent in Korean nurses returning after parental leave.

• Implications for practice, education, and/or policy
  While retention intention was greater than midpoint level in this sample, to strengthen it, promoting family-friendly policies and exploring measures that support nurses' resilience, health, and adjustment to work changes are needed for nurses returning to work from parental leave.

Research Design

본 연구는 육아휴직 후 복직 간호사의 재직의도에 영향을 미치는 요인을 확인하기 위한 설문조사 연구로, STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) 가이드라인에 따라 설문지와 설문조사지가 확인되고 수집되었습니다. 설문조사지의 내용은 육아휴직 후 복직 간호사의 재직의도에 영향을 미치는 요인을 확인하기 위한 설문조사 연구로, STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) 가이드라인에 따라 설문지와 설문조사지가 확인되고 수집되었습니다. 설문조사지의 내용은 육아휴직 후 복직 간호사의 재직의도에 영향을 미치는 요인을 확인하기 위한 설문조사지가 포함되어 있습니다.
연구 대상
본 연구의 대상은 부산광역시와 울산광역시에 소재한 총 10개의 병원에서 육아휴직을 실시한 후에 복직하여 근무하기 시작한지 1 년 이하인 간호사를 대상으로 하였다. 복직 후 1년 이하인 자로 재한을 둔 것은, 육아휴직에서 복직 후의 업무 적응기간으로 94.4% 가 '1년 이하'라고 응답한 연구 결과(s)를 근거로 하였다.

본 연구를 위해 필요한 표본 크기는 G power 3.1.9.4 program을 사용하였고 효과 크기 .15 (중간 크기), 유의 수준 .05, 검정력 .80 이었다. 선행연구[11]에 근거하여 예측 변수는 8개(임상경험, 가정 의 일평균 소득, 경개상대, 자녀 수, 육아휴직 후 복직한 이유, 양육스트레스, 일-가정 갈등, 자아탄력성)였다. 선행연구[11]에 근거하여 위계적 회귀분석에 필요한 최소 표본 수는 109명으로 산출 했으나, 탐약은 15%를 고려하여 총 131명을 대상으로 하였다. 대상자의 일반적 특성 중 성별은 여성이 89.6%로 구성된 5 점 Likert 척도이며(전혀 그렇지 않다 1점, 매우 그렇다 5점), 점수 범위는 25~ 125점으로 점수가 높을수록 대상자의 자아탄력성 정도가 높음을 의미한다. 도구의 신뢰도 Cronbach's α는 .89, 본 연구에서는 .92였다.

자료 수집
자료 수집은 2021년 1월 1일부터 3월 10일까지 시행하였다. 본 연구자가 해당 병원 간호부의 승인을 받은 후 병원에 방문하여 대상자에게 연구의 취지와 목적을 설명하고 자발적인 동의를 구한 후 설문조사를 실시하였다. 설문지 작성 시간은 약 10~15분 정도 소요되었고 연구에 참여한 모든 대상자에게 소정의 선물을 제공하였다.

자료 분석 방법
수집된 자료는 IBM SPSS for Windows ver. 26.0 (IBM Corp., Armonk, NY, USA)를 이용하여 분석하였으며 분석 자료의 정규성 검정은 시트도와 체도를 이용하였다. 구체적인 분석방법은 다음과 같다.

• 대상자의 일반적 특성과 육아휴직 관련 특성은 빈도와 백분율, 평균과 표준변량으로 분석하였다.
• 대상자의 양육스트레스, 일-가정 갈등, 자아탄력성, 재직의도는 이분별로 분석하였다.
• 대상자의 일반적 특성과 육아휴직 관련 특성에 따른 재직의도 차이는 independent t-test, 일원분산분석, Mann-Whitney U-test, 사후 검정은 Scheffé test로 분석하였다.
• 대상자의 양육스트레스, 일-가정 갈등, 자아탄력성, 재직의도의 상관관계는 Pearson correlation coefficients로 분석하였다.
• 대상자의 재직의도에 영향을 미치는 요인은 위계적 회귀분석으로 분석하였다.

일-가정 갈등
일-가정 갈등 측정은 Netemeyer 등(20)이 직장인을 대상으로 개발한 일-가정 갈등 척도를 Kwon과 Choi [21]가 한글로 표준화한 측정도구를 사용하였다. 총 10문항으로 일-가정 갈등 5문항, 가정-직장 방향 갈등 5문항으로 구성된 5점 Likert 척도이며(전혀 그렇지 않다 1점, 매우 그렇다 5점), 점수 범위는 10~50점으로 점수가 높을수록 자료 및 대상자의 갈등이 높음을 의미한다. 도구의 신뢰도 Cronbach's α는 .89, 본 연구에서는 .86이었다.

자료 분석 방법

• 대상자 특성에 따른 재직의도 차이
대상자의 일반적 특성 중 성별은 여성이 96.4% (107명), 연령은 평균 26.8 ± 4.2세, 고용 형태는 전문직 78.9% (95명), 일반직 21.1% (27명)이었다. 본 연구에서는 .92였다.

요약
본 연구는 ...
균 33.70±3.60세로 31~35세가 63.1% (70명)였다. 학력은 대학교 졸업이 55.0% (61명), 임상 경력은 평균 132.63±45.91개월로 120~179개월이 54.1% (60명), 근무 부서는 병동이 28.8% (32명), 현 부서 경력은 평균 56.81±53.60개월로 12개월 이하가 37.8% (42명)로 많았다. 근무 직위는 일반 간호사가 73.9% (82명), 근무 형태는 2교대가 61.3% (68명), 가구의 월 수입은 평균 565.13±179.44만원으로 400만원 이하가 24.3% (27명)로 많았다. 근무 시 주 양육자는 보육시설이라고 응답한 대상자가 37.8% (42명), 퇴근 후 주 양육자는 본인이라고 응답한 대상자가 73.9% (82명)로 많았다. 복직 이유가 육아휴직 최대 기간 만료라고 응답한 대상자가 33.3% (37명)이었고 복직 시 근무지 이동이 없다는 응답이 51.4% (57명)로 많았다.

대상자의 재직의도에 차이를 보이는 특성은 건강상태 (F = 16.40, p < .001), 육아휴직을 받은 횟수 (t = 4.01, p < .001), 육아휴직 이용기간 (F = 3.99, p = .021), 자녀 수 (t = 3.39, p = .001)였다 (Table 1). 이를 Scheffe test로 사후 검정을 실시한 결과, 건강상태가 좋을수록 재직의도가 높게 나타났고 육아휴직 이용기간이 12개월 이하인 경우가 육아휴직 이용기간이 13~23개월인 경우보다 재직의도가 높

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>n (%)</th>
<th>Mean ± SD</th>
<th>t or F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>107 (96.4)</td>
<td>5.61 ± 1.31</td>
<td>.342†</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>4 (3.6)</td>
<td>6.12 ± 0.28</td>
<td></td>
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</tr>
<tr>
<td>Age (year)</td>
<td>≤ 30</td>
<td>16 (14.4)</td>
<td>33.70±3.60</td>
<td>0.88</td>
<td>.450</td>
</tr>
<tr>
<td></td>
<td>31–35</td>
<td>70 (63.1)</td>
<td>6.04±1.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>36–39</td>
<td>15 (13.5)</td>
<td>5.54±1.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 40</td>
<td>10 (8.9)</td>
<td>5.80±1.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational level</td>
<td>College</td>
<td>39 (35.1)</td>
<td>5.77±1.24</td>
<td>0.63</td>
<td>.533</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>61 (55.0)</td>
<td>5.50±1.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ Graduate school</td>
<td>11 (9.9)</td>
<td>5.81±1.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical experience (month)</td>
<td>≤ 60</td>
<td>7 (6.3)</td>
<td>132.63±45.91</td>
<td>1.05</td>
<td>.374</td>
</tr>
<tr>
<td></td>
<td>61–119</td>
<td>24 (21.6)</td>
<td>5.19±1.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>120–179</td>
<td>60 (54.1)</td>
<td>5.97±1.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 180</td>
<td>20 (18.0)</td>
<td>5.63±1.31</td>
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<td></td>
</tr>
<tr>
<td>Work unit</td>
<td>General ward</td>
<td>32 (28.8)</td>
<td>5.72±1.02</td>
<td>1.42</td>
<td>.222</td>
</tr>
<tr>
<td></td>
<td>Outpatient department</td>
<td>30 (27.0)</td>
<td>5.73±1.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intensive care unit</td>
<td>19 (17.1)</td>
<td>5.77±1.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emergency room</td>
<td>6 (5.4)</td>
<td>5.47±1.14</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Operating room and anesthesiology</td>
<td>19 (17.1)</td>
<td>5.00±1.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivery room</td>
<td>5 (4.5)</td>
<td>6.43±0.58</td>
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<td></td>
</tr>
<tr>
<td>Current clinical experience (month)</td>
<td>≤ 12</td>
<td>42 (37.8)</td>
<td>56.81±53.60</td>
<td>0.16</td>
<td>.851</td>
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<tr>
<td></td>
<td>13–95</td>
<td>32 (28.8)</td>
<td>5.56±1.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 96</td>
<td>37 (33.3)</td>
<td>5.73±1.37</td>
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<td></td>
</tr>
<tr>
<td>Position</td>
<td>Staff nurse</td>
<td>82 (73.9)</td>
<td>5.65±1.24</td>
<td>0.15</td>
<td>.875</td>
</tr>
<tr>
<td></td>
<td>≥ Charge nurse</td>
<td>29 (26.1)</td>
<td>5.60±1.46</td>
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<tr>
<td>Work shift schedule</td>
<td>Only daytime</td>
<td>40 (36.0)</td>
<td>5.63±1.45</td>
<td>0.08</td>
<td>.922</td>
</tr>
<tr>
<td></td>
<td>2-shift</td>
<td>3 (2.7)</td>
<td>5.33±0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-shift</td>
<td>68 (61.3)</td>
<td>5.64±1.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly family income (KRW)</td>
<td>≤ 4 million</td>
<td>27 (24.3)</td>
<td>5.59±1.50</td>
<td>0.63</td>
<td>.638</td>
</tr>
<tr>
<td></td>
<td>4.1 million-5 million</td>
<td>17 (15.3)</td>
<td>5.32±1.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.1 million-6 million</td>
<td>26 (23.4)</td>
<td>5.75±1.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.1 million-7 million</td>
<td>23 (20.7)</td>
<td>5.90±0.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 7 million</td>
<td>18 (16.2)</td>
<td>5.45±1.42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Continued to the next page)
Table 1. Continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>n (%)</th>
<th>Mean ± SD</th>
<th>t or F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective health status</td>
<td>Poor</td>
<td>23 (20.7)</td>
<td>4.57 ± 1.37</td>
<td>16.4</td>
<td>.001</td>
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<tr>
<td></td>
<td>Moderate</td>
<td>52 (46.8)</td>
<td>5.61 ± 1.09</td>
<td>(a &lt; b &lt; c)†</td>
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</tr>
<tr>
<td></td>
<td>Good</td>
<td>36 (32.4)</td>
<td>6.33 ± 1.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleep quality</td>
<td>Poor</td>
<td>46 (41.4)</td>
<td>5.61 ± 1.24</td>
<td>0.15</td>
<td>.861</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>47 (42.3)</td>
<td>5.59 ± 1.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>18 (16.2)</td>
<td>5.78 ± 1.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of times of parental leave</td>
<td>1</td>
<td>77 (69.4)</td>
<td>5.94 ± 1.13</td>
<td>4.01</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>≥ 2</td>
<td>34 (30.6)</td>
<td>4.93 ± 1.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of parental leave (month)</td>
<td>≤ 12</td>
<td>65 (58.6)</td>
<td>5.89 ± 1.24</td>
<td>3.99</td>
<td>.021</td>
</tr>
<tr>
<td></td>
<td>13–23</td>
<td>40 (36.0)</td>
<td>5.18 ± 1.35</td>
<td>(a &gt; b)‡</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 24</td>
<td>6 (5.4)</td>
<td>5.77 ± 0.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of children</td>
<td>1</td>
<td>68 (61.3)</td>
<td>5.95 ± 1.14</td>
<td>3.39</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>≥ 2</td>
<td>43 (38.7)</td>
<td>5.13 ± 1.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main caregiver during work</td>
<td>Childcare facilities</td>
<td>34 (30.6)</td>
<td>5.43 ± 1.49</td>
<td>1.17</td>
<td>.325</td>
</tr>
<tr>
<td></td>
<td>Parent and relatives</td>
<td>18 (16.2)</td>
<td>5.47 ± 1.67</td>
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</tr>
<tr>
<td></td>
<td>Parents-in-law</td>
<td>42 (37.8)</td>
<td>5.64 ± 0.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spouse</td>
<td>13 (11.7)</td>
<td>6.06 ± 1.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Babysitter</td>
<td>4 (3.6)</td>
<td>6.58 ± 0.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main caregiver after work</td>
<td>Self</td>
<td>9 (8.1)</td>
<td>5.96 ± 1.78</td>
<td>1.21</td>
<td>.309</td>
</tr>
<tr>
<td></td>
<td>Spouse</td>
<td>3 (2.7)</td>
<td>4.66 ± 1.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parent and relatives</td>
<td>2 (1.8)</td>
<td>7.00 ± 0.70</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Parents-in-law</td>
<td>15 (13.5)</td>
<td>5.77 ± 0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Childcare facilities</td>
<td>82 (73.9)</td>
<td>5.57 ± 1.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main reason for returning to work</td>
<td>Expiration of the maximum period</td>
<td>37 (33.3)</td>
<td>5.36 ± 1.14</td>
<td>1.59</td>
<td>.169</td>
</tr>
<tr>
<td></td>
<td>Economic difficulty</td>
<td>29 (26.1)</td>
<td>5.35 ± 1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Opportunities for social activities</td>
<td>14 (12.6)</td>
<td>5.95 ± 1.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-actualization and development</td>
<td>18 (16.2)</td>
<td>5.97 ± 1.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>5 (4.5)</td>
<td>6.43 ± 0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Getting out of housework</td>
<td>8 (7.2)</td>
<td>6.06 ± 1.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation to new workplace upon return</td>
<td>Yes</td>
<td>54 (46.8)</td>
<td>5.76 ± 1.24</td>
<td>1.04</td>
<td>.300</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>57 (51.4)</td>
<td>5.50 ± 1.34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

†Mann-Whitney U-test, ‡Scheffé test.

가. 그리고 육아휴직을 받은 총 횟수가 1회인 경우, 총 자녀 수가 1명인 경우가 육아휴직을 받은 총 횟수가 2회 이상인 경우, 총 자녀 수가 2명 이상인 경우보다 재직의도가 높았다.

대상자의 재직의도는 총 33.80 ± 7.78점(6–48점 기준)으로 중등도 이상이었다. 양육스트레스는 총 101.70 ± 17.57점(32–160점 기준)으로 중등도 이상, 일-가정 갈등은 총 29.63 ± 7.00점(10–50점 기준)으로 중등도였으며, 자아탄력성은 총 85.02 ± 12.75점(25–125점 기준)으로 중등도 이상이었다(Table 2).

대상자의 재직의도는 양육스트레스(r = −.29, p = .002), 일-가정 갈등(r = −.44, p < .001)과 약한 음의 상관관계가 있었고, 자아탄력성(r = .33, p < .001)과 약한 양의 상관관계가 있었다. 양육스트레스와 자아탄력성 간에는 약한 음의 상관관계(r = −.28, p = .002), 일-가정 갈등과 자아탄력성 간에는 약한 음의 상관관계(r = −.35, p < .001)가 있었으며, 양육스트레스와 일-가정 갈등 간에는 중강도로 양의 상관관계(r = .62, p < .001)가 있었다(Table 3).

Table 2. Participants’ retention intent, parenting stress, work-family conflict, and resilience (N=111)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible score range</th>
<th>Mean ± SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention intent</td>
<td>6–48</td>
<td>33.80 ± 7.78</td>
<td>6</td>
<td>48</td>
</tr>
<tr>
<td>Parenting stress</td>
<td>32–160</td>
<td>101.70 ± 17.57</td>
<td>48</td>
<td>145</td>
</tr>
<tr>
<td>Work-family conflict</td>
<td>10–50</td>
<td>29.63 ± 7.00</td>
<td>10</td>
<td>45</td>
</tr>
<tr>
<td>Resilience</td>
<td>25–125</td>
<td>85.02 ± 12.75</td>
<td>52</td>
<td>120</td>
</tr>
</tbody>
</table>
대상자의 재직의도에 영향을 미치는 요인

대상자의 재직의도에 영향을 미치는 요인을 분석하기 위하여 위계적 회귀분석으로 일반적 특성 중 재직의도에 유의한 차이를 보인 건강상태와 육아휴직 관련 특성 중 육아휴직을 받은 횟수, 육아휴직 이용기간, 자녀 수와 재직의도에 유의한 상관관계를 보인 양육스트레스, 일-가정 갈등, 자아탄력성을 단계별로 투입한 결과는 Table 4와 같다. 본 연구의 위계적 회귀분석 결과 Durbin-Watson의 통계량은 1.52로 자기 상관의 문제가 없고, 공차 한계(tolerance)는 .14~.87로 .10 이상의 값이 나타났으며 통산평창지수(variance inflation factor)를 구한 결과 1.14~6.96로 10 미만의 값으로 나타났기에 회귀모형은 적합하다고 할 수 있다.

제1회귀 모형(F=16.40, p<.001)의 설명력은 21.9%였으며, 통계적으로 유의한 변수는 건강상태 나쁨(β=-.32, p=.001), 건강상태 좋음(β=.26, p=.005) 순이었다. 제2회귀 모형(F=8.34, p<.001)의 설명력은 28.6%로 6.7% 증가하였으며, 건강상태 나쁨 (β=-.30, p=.001), 건강상태 좋음(β=.25, p=.007), 육아휴직을 받은 횟수 1회(β=.48, p=.008), 육아휴직 이용기간 12개월 이내 (β=-.51, p=.016), 육아휴직 이용기간 13개월 이상 24개월 미만 (β=-.31 p=.083), 자녀 수(β=-.09 p=.538)로 나타나 통계적으로 유의한 변수는 육아휴직 이용기간 12개월 이내, 육아휴직을 받은 횟수 1회, 그리고 건강상태가 나쁨으로 나타났다. 제3회귀 모형(F=8.09, p<.001)의 설명력은 36.7%로 8.1% 증가하였으며, 건강상태 나쁨 (β=-.29, p=.001), 건강상태 좋음(β=.15, p=.101), 육아휴직을 받은 횟수 1회(β=.37, p=.032), 육아휴직 이용기간 12개월 이내(β=-.45 p=.025), 육아휴직 이용기간 13개월 이상 24개월 미만(β=-.30 p=.075), 자녀 수(β=.08 p=.547), 양육스트레스(β=.02, p=.785), 일-가정 갈등(β=-.24, p=.022), 자아탄력성(β=.18, p=.027)으로 통계적으로 유의한 변수는 육아휴직 이용기간 12개월 이내, 육아휴직을 받은 횟수 1회, 건강상태 나쁨, 일-가정 갈등, 자아탄력성 순으로 나타났다. 즉 육아휴직 이용기간이 짧음수록, 육아휴직을 받은 총 횟수가 적음수록, 건강상태가 좋음 수록, 일-가정 갈등이 낮음수록, 그리고 자아탄력성이 높음수록 재직의도가 높아진다고 할 수 있다.

Table 3. Correlations among retention intent, parenting stress, work-family conflict, and resilience (N=111)

<table>
<thead>
<tr>
<th>Variable</th>
<th>r (p)</th>
<th>Retention intent</th>
<th>Parenting stress</th>
<th>Work-family conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective health status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>-0.32</td>
<td>-3.60 (&lt;.001)</td>
<td>-3.37 (&lt;.001)</td>
<td>-3.48 (&lt;.001)</td>
</tr>
<tr>
<td>Good</td>
<td>0.26</td>
<td>2.88 (.005)</td>
<td>2.76 (.007)</td>
<td>1.65 (.101)</td>
</tr>
<tr>
<td>Number of times of parental leave</td>
<td></td>
<td>1.36</td>
<td>0.71</td>
<td>0.70</td>
</tr>
<tr>
<td>Duration of parental leave (month)</td>
<td></td>
<td>1.36</td>
<td>0.71</td>
<td>0.70</td>
</tr>
<tr>
<td>≤ 12</td>
<td>-0.51</td>
<td>-2.45 (.016)</td>
<td>-1.94 (.025)</td>
<td>-2.17 (.075)</td>
</tr>
<tr>
<td>13-23</td>
<td>-0.31</td>
<td>-1.75 (.083)</td>
<td>-0.82 (.075)</td>
<td>-0.60 (.547)</td>
</tr>
<tr>
<td>Number of children</td>
<td>-0.09</td>
<td>-0.14 (.69)</td>
<td>-0.13 (.66)</td>
<td>-0.13 (.66)</td>
</tr>
<tr>
<td>Parenting stress</td>
<td>0.02</td>
<td>0.27 (.785)</td>
<td>0.18 (.027)</td>
<td>0.22 (.027)</td>
</tr>
<tr>
<td>Work-family conflict</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>t (p)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Factors influencing retention intent (N=111)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>5.61</td>
<td>5.91</td>
<td>5.62</td>
</tr>
<tr>
<td>Subjective health status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>-1.03</td>
<td>-0.97</td>
<td>-0.95</td>
</tr>
<tr>
<td>Good</td>
<td>0.71</td>
<td>0.70</td>
<td>0.41</td>
</tr>
<tr>
<td>Number of times of parental leave</td>
<td></td>
<td>1.36</td>
<td>0.71</td>
</tr>
<tr>
<td>Duration of parental leave (month)</td>
<td></td>
<td>1.36</td>
<td>0.71</td>
</tr>
<tr>
<td>≤ 12</td>
<td>-1.36</td>
<td>-1.19</td>
<td>-1.19</td>
</tr>
<tr>
<td>13-23</td>
<td>-0.85</td>
<td>-0.82</td>
<td>-0.82</td>
</tr>
<tr>
<td>Number of children</td>
<td>-0.25</td>
<td>-0.23</td>
<td>-0.23</td>
</tr>
<tr>
<td>Parenting stress</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>Work-family conflict</td>
<td>-0.44</td>
<td>-0.24</td>
<td>-0.24</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
</tr>
<tr>
<td>F(β)</td>
<td>16.40</td>
<td>8.34</td>
<td>8.09</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.219</td>
<td>.286</td>
<td>.367</td>
</tr>
</tbody>
</table>

† Reference variables were subjective health status (moderate), number of times of parental leave (≥2), duration of parental leave reference (≥24 months), and number of children (≥2).
Discussion

본 연구는 육아휴직 후 복직 간호사의 재직의도에 영향을 미치는 요인을 규명하고자 하였다. 본 연구 결과를 토대로 다음과 같이 논의하고자 한다.

본 연구에서 대상자의 재직의도에 영향을 미치는 요인은 육아휴직 이용기간, 육아휴직을 받은 횟수, 건강상태, 일-가정 갈등, 자아탄력성 순으로 나타났다. 이는 육아휴직 이용기간과 육아 휴직을 받은 횟수가 길어질수록 업무 공백이 생기고, 복귀 후 새로운 간호업무 수행의 어려움, 변화된 부서원들의 절문과 팀워크 조성의 어려움 등을 겪기 때문으로 생각된다. 이에 육아휴직 기간 동안 변경된 간호 업무와 신규 의료기기 사용법, 새로운 약물 교육 등과 관련한 교육 프로그램을 제공하여 복직 후 재직기 간을 가질 수 있도록 하고, 직장 동료뿐만 아니라 새로운 팀워크를 잘 이끌어 나갈 수 있는 지도자를 맡은 필요가 있다. 그리고 본 연구 결과에서 복직 시 근무지 이동은 재직의도에 영향을 미치지 않았지만, 복직 시 근무지 이동이 있다고 응답한 대상자가 46.8%이었고, 본 연구에서 양육스트레스가 재직의도에 영향을 미쳤던 연구[10]와 상반되는 결과이다. 하지만 본 연구에서 양육스트레스와 재직의도 사이에 유의한 음의 상관관계가 있던 연구[10]에 의한 결과로 보아, 재직의도가 양육스트레스에 영향을 받는다는 것이 맞으리라 생각한다.

대상자의 재직의도에 대한 다른 영향요인은 건강상태로 나타났는데, 이는 간호사의 재직의도에 영향을 미치는 영향 요인[24]으로서 건강상태가 재직의도에 영향을 미치는 결과와 일치한다. 이러한 결과로 볼 때 육아휴직 후 복직 간호사의 건강상태, 신체적 건강상태를 향상시키는 것이 재직의도에 긍정적인 영향을 미칠 것으로 생각된다. 간호사 자신의 건강상태는 재직의도에 밀접한 관련이 있기 때문에, 건강상태가 호전될수록 간호사의 재직의도는 향상될 것으로 예상된다. 또한 육아휴직 후 복직 간호사의 건강상태, 신체적 건강상태를 향상시키는 것이 재직의도에 긍정적인 영향을 미칠 것으로 예상된다. 또한 육아휴직 동안 변경된 간호 업무 등과 관련된 교육 프로그램을 제공하여 복직 후 재직기 간을 가질 수 있도록 하여야 한다. 그리고 이들의 정신적, 신체적 건강상태를 향상시키기 위해서는, 정책적, 성적, 사회적, 정신적 지원이 필요하다. 이를 통해 수준 높은 간호서비스를 제공할 수 있고 육아휴직 후 복직 간호사의 재직의도를 높일 수 있을 것으로 생각된다. 재직의도를 높이기 위해서는, 근로시간을 탄력적으로 조정하여 근무할 수 있도록 하고, 가정 친화적인 정책을 구축 및 적용하여 직장과 가정을 양립할 수 있도록 하여야 한다. 그리고 자기 계발을 할 수 있는 기회 제공 및 자아탄력성 증진 프로그램 개발과 적용이 필요하다. 또한 육아휴직 동안 변경된 간호 업무 등과 관련된 교육 프로그램을 제공하여 복직 후 재직기 간을 가질 수 있도록 하여야 한다. 그리고 이들의 정신적, 신체적 건강상태를 향상시키기 위해서는, 정책적, 성적, 사회적, 정신적 지원이 필요하다. 이를 통해 수준 높은 간호서비스를 제공할 수 있고 육아휴직 후 복직 간호사의 재직의도를 높일 수 있을 것으로 생각된다. 재직의도를 높이기 위해서는, 근로시간을 탄력적으로 조정하여 근무할 수 있도록 하고, 가정 친화적인 정책을 구축 및 적용하여 직장과 가정을 양립할 수 있도록 하여야 한다. 그리고 자기 계발을 할 수 있는 기회 제공 및 자아탄력성 증진 프로그램 개발과 적용이 필요하다. 또한 육아휴직 동안 변경된 간호 업무 등과 관련된 교육 프로그램을 제공하여 복직 후 재직기 간을 가질 수 있도록 하여야 한다. 그리고 이들의 정신적, 신체적 건강상태를 향상시키기 위해서는, 정책적, 성적, 사회적, 정신적 지원이 필요하다. 이를 통해 수준 높은 간호서비스를 제공할 수 있고 육아휴직 후 복직 간호사의 재직의도를 높일 수 있을 것으로 생각된다. 재직의도를 높이기 위해서는, 근로시간을 탄력적으로 조정하여 근무할 수 있도록 하고, 가정 친화적인 정책을 구축 및 적용하여 직장과 가정을 양립할 수 있도록 하여야 한다. 그리고 자기 계발을 할 수 있는 기회 제공 및 자아탄력성 증진 프로그램 개발과 적용이 필요하다. 또한 육아휴직 동안 변경된 간호 업무 등과 관련된 교육 프로그램을 제공하여 복직 후 재직기 간을 가질 수 있도록 하여야 한다. 그리고 이들의 정신적, 신체적 건강상태를 향상시키기 위해서는, 정책적, 성적, 사회적, 정신적 지원이 필요하다. 이를 통해 수준 높은 간호서비스를 제공할 수 있고 육아휴직 후 복직 간호사의 재직의도를 높일 수 있을 것으로 생각된다.
Authors' contributions
Conceptualization, Methodology: Jung YE, Sung MH; Data curation, Formal analysis, Investigation: Jung YE; Supervision: Sung MH; Writing–original draft: Jung YE; Writing–review & editing: Sung MH.

Conflict of interest
The authors declared no conflict of interest.

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Data availability
The dataset files are available from Harvard Dataverse at https://doi.org/10.7910/DVN/ZXWAUY

Acknowledgments
None.

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3. Hospital Nurses Association. 2019 A survey on working conditions [Internet]. Seoul: Author; 2021 Hospital Nurses Association. 2019 A survey on working conditions [Internet].

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Factors influencing pregnancy stress in pregnant women in Korea: a cross-sectional study

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Purpose: The purpose of this study was to investigate the association between maternal knowledge and social support on pregnancy stress among pregnant women in Korea.

Methods: The participants in this study were 148 pregnant women in Korea, recruited from online communities on pregnancy and/or childbirth, from June 2019 to April 2020. The collected data were analyzed using the independent t-test, one-way analysis of variance, Pearson correlation coefficient, and multiple regression.

Results: Participants were at average 18.25±8.28 weeks gestation, 56% were in the second trimester, 31% had one or more health issues in the current pregnancy (e.g., hyperemesis gravidarum), and 76% were first-time mothers. Participants had moderate levels of pregnancy stress (mean, 23.09±7.11 points out of 48) and maternal knowledge (mean, 14.42±4.67 points out of 21), whereas social support was somewhat high (mean 45.88±7.81 points out of 60). Pregnancy stress was weakly negatively correlated with social support (r=–.37, p<.001). Main source of pregnancy information (β=–.21, p=.011), marital satisfaction (β=–.18, p=.036), and social support (β=–.19, p=.038) were identified as significant factors affecting pregnancy stress, and these variables had an explanatory power of 22.7% for pregnancy stress.

Conclusion: Based on these findings, nurses should assess pregnancy-related stress during pregnancy and consider main source of pregnancy information and marital satisfaction when providing education or counseling. Moreover, strategies to reduce pregnancy stress through social support are needed to improve the quality of life for pregnant women.

Keywords: Knowledge; Pregnant women; Psychological distress; Social support
Introduction

Pregnancy stress is an important factor that affects mental health during pregnancy and can exert a negative effect on pregnancy outcomes. However, studies that identify factors related to pregnancy stress in pregnant Korean women are very limited.

Main source of pregnancy information, marital satisfaction, and social support were significant predictors for pregnancy stress among expecting women in Korea. Of these factors, source of pregnancy information was the most powerful influencing factor.

Nurses can use findings to assess pregnancy stress levels and provide accurate information on pregnancy to expecting women and their families. Future studies can explore ways to help couples increase marital satisfaction and strengthen social support during pregnancy.
향을 확인하는 것은 매우 의미있다고 하겠다.

임부의 임신스트레스는 모성 관련 지식, 사회적 지지뿐만 아니라 나
이, 경제적 수준, 결혼상태, 동거가족, 직업 등 일반적 특성과 임신
주수, 재회임신 여부, 자녀 수, 임신 중 신과 문제 등 임신 관련 특성
에 따라 다르게 나타났다[14,15]. 이러한 다양한 인구학적 요소들
이 임신스트레스에 어떠한 관련성이 있는지 확인할 필요가 있다.

최근까지 임신스트레스와 관련한 연구는 임신 및 출산 후 우울, 불안 등 심리적인 요소와의 관계나 원인을 파악하는 연구[20,21], 임신
스트레스가 출산 결과에 영향을 미치는 요인을 확인한 연구[10,11], 임신스트레스를 감소시키기 위한 중재 프로그램을 개발한
연구[22], 임신 전과 임신 중에 측정한 임신스트레스에 관한 문헌고
찰 연구[23] 등 국내외에서 다양하게 이루어지고 있다. 하지만 모성
관련 지식, 사회적 지지 및 임신스트레스를 동시에 확인한 연구는
 찾아보고 힘들고, 특히 임부 대상의 모성 관련 지식에 대한 연구는
 매우 부족하다. 또한 임신 중 우울, 불안의 관련 요인을 확인한 연구
는 많았으나 임신스트레스의 관련 요인을 확인한 연구는 미흡하
되었고, 부정적 심리 요소와의 관련성 등 단편적 연구에 그쳐 다양
한 영역을 통합적으로 확인하는 연구가 필요하다.

따라서 본 연구는 모성 관련 지식과 사회적 지지의 부족이 임신
스트레스에 영향을 미치는지를 연구하고 이를 통해 임
부의 임신스트레스를 관리하는 효과적인 전략을 수립하여 중재 프
로그램의 기초 자료로 활용하고자 시도하였다.

본 연구의 목적은 임부의 모성 관련 지식과 사회적 지지가 임신
스트레스에 미치는 영향을 파악하고자 함이며, 구체적인 목적은 다
음과 같다.

(1) 임부의 임신스트레스, 모성 관련 지식 및 사회적 지지 정도를 파
악한다.
(2) 임부의 특성에 따른 임신스트레스의 차이를 파악한다.
(3) 임부의 임신스트레스, 모성 관련 지식, 사회적 지지의 관계를 파
악한다.
(4) 임부의 임신스트레스에 영향을 미치는 요인을 파악한다.

Methods

Ethics statement: Written informed consent was exempted by
the Institutional Review Board of Ewha Womans University
(EWHA-201905-0020) due to the nature of the online survey.
Explanations were provided that participation in the online
questionnaire is regarded as consent and all data were anony-
mously treated.

연구 설계
본 연구는 모성 관련 지식과 사회적 지지가 임신스트레스에 영향을
미치는 요인을 규명하기 위한 상관성 조사연구이다. 본 연구는
STROBE 보고지침(https://www.strobe-statement.org)에 따라 기
술하였다.

연구 대상 및 표집 방법
본 연구는 임부를 대상으로 시행한 설문조사 연구로 임부들의 사이
비 모임 인터넷 카페에 대상자 모집 문건을 게시한 후 자발적으
로 동의한 대상자만 참여하였다. 대상자의 총 271명에서 선정한
연구 대상자는 모성 관련 지식과 사회적 지지가 18명을 포함한
143명을 대상으로 하였다. 연구 대상자는 Cohen [25]의
Power analysis 공식에 근거한 G*Power 3.1.9.2 프로그램을 이용하
였고, 다중회귀분석에서 필요한 최소표본 크기를 재한한 결과
임신스트레스 영향요인을 확인한 선행연구[26]를 근거로 유의수준
.05, 중간효과 크기 .18, 검정력 0.80로 계정하였다. 예측변수는 인
반적 특성 10개, 임신 관련 특성 11개, 동료변수(모성 관련 지식,
사회적 지지) 2개를 합하여 총 23개를 설정하였다[14]. 그 결과 최
소 표본 수는 142명으로 산출되었으나, 탈락률을 10%로 감안하여
최종 160명을 목표로 하고 150명을 모집하였다. 설문지 중 응답이
불완전하거나 불실현한 설문지 2부를 제외한 148부를 최종 자료
분석에 이용하였다.

연구 도구
본 연구에서 사용한 도구는 모성 관련 지식, 사회적 지지, 임신스트
레스 도구이다. 이들 측정도구를 도구 개발자와 변인자의 승인을
받고 사용하였다.

임신스트레스
본 연구에서 임신스트레스는 Pop 등[27]이 개발한 Tilburg Preg
nancy Distress Scale (TPDS)를 개발자로부터 허락을 구한 후 영어
와 한국어로 동등한 문헌학 전문가가 도구 번역 가이드라인 과정을
[28] 참고하여 번역과 역번역의 과정을 거쳐 진행하였다. 번역하여
임신스트레스 도구는 신과 경력 5년 이상의 간호사 3인, 조산사 1
인, 산부인과 의사 1인으로 구성된 전문가 집단에게 내용 탐색도에
대한 자문을 구하였다. 내용 탐색도 지수(Content Validity Index
Item-I-CVI)는 .60-1.00으로 평균 .95이었고, 총 16문항 중 한 가
지 문항(14번 문항: 임신과 관련된 전반적인 문제들이 출산 이후에도
계속될 것이라 한다)이 .60이었으나 전문가 집단과 상의한 결과 중
요한 문항으로 판단하여 포함하기로 하였으며 S-CVI (Scale-level
Content Validity Index-S-CVI/Ave.)는 .925이었다. 현직 국어 교
사 1인에게 문항의 적절성을 검증받은 후 설문지를 완성하였다. 임

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짓스트레스는 원 도구대로 총 16문항으로, 부정적 정서(negative affect), 배우자 참여(partner involvement)의 하위 영역으로 구성된다. 각 문항은 4점 Likert 척도(매우 자주 그렇다 0, 거의 그렇지 않다 4)로 합산점수가 최저 0점에서 최고 48점이며, 점수가 높을수록 임신스트레스가 높음을 의미한다. TPDS는 절단점수 (cut-off value)가 있는 도구로 총 점수가 17점 초과이거나 부정적 정서 영역은 12점 초과, 배우자 참여 영역은 7점 초과일 때 유의미한 것으로 간주한다. 도구 개발 당시 신뢰도는 Cronbach’s α=.78이었고, 본 연구에서는 Cronbach’s α=.84이었다.

모모 관련 자식
본 연구에서 모모 관련 자식은 Kim [29]가 개발한 도구를 사례학적 상황에 맞도록 연구자가 수정 및 보완하였다. 예를 들면 우울요를 모으는 문항은 수정하였고, 기초체온법, 배란일 계산법, 건강한 임신하여 부작용 등의 문항을 삭제하였으며, 임신과 출산 시 적용하는 국가 정책 및 허가, 산전검사 방법 및 시기, 출산 후 변화 및 관리방법 등을 추가하였다. 산 경력 5개 이상의 임산부가 30명, 조산사 1명, 모모간호사 전공자 1인으로 구성된 전문가 집단에게 내용 탐정도를 확인받은 후 사용하였다. t-CVI는 .80~1.00으로 평균 .97이었다. 모모 관련 자식은 총 21문항으로 이루어져 있으며, 각 문항은 ‘예’ 1점, ‘아니요’ 0점으로 측정하였다. 합산점수 범위는 최저 0점에서 최고 21점으로, 점수가 높음수록 자식 조정이 높음을 의미한다. 도구 개발 당시 신뢰도는 Cronbach’s α=.82이었고, 본 연구에서는 Cronbach’s α=.82이었다.

사회적 지지
본 연구에서 임부의 사회적 지지지는 Zimet 등[30]이 개발한 Multidimensional Scale of Perceived Social Support (MSPSS)의 한국어판 도구를 원 도구 개발자로부터 사용 승인을 받아 사용하였다. MSPSS는 총 12문항으로 구성되어 있으며 가족, 친구, 의료 인턴으로부터 지지를 제공하는 도구이다. 각 문항들은 5점 척도(매우 그렇지 않다 1, 매우 그렇지 않다 5)로 합산점수가 최저 12점에서 최고 60점으로 점수가 높음수록 사회적 지지가 높음을 의미한다. 도구 개발 당시 신뢰도는 Cronbach’s α=.83이었고, 본 연구에서는 Cronbach’s α=.81이었다.

일반적 특성 및 임신 관련 특성
일반적 특성은 임부의 나이, 교육 수준, 종교, 직업, 결혼 만족도 등 10개의 항목으로 이루어졌으며, 임신 관련 특성은 계획임신 여부, 의사 및 간호사의 정중 출산(대비하여 또는 가족, 친구) 등 11개 항목으로 연구자가 만화로 구성하였다.

자료 수집
본 연구는 2019년 6월 1일부터 2020년 4월 30일까지 임신 및 출산 과 관련 인터넷 카페를 통한 온라인 설문조사로 자료를 수집하였다. 설문조사는 인터넷 카페 운영자에게 협조를 구하였고, 인터넷 카페 게시판에 설문조사 링크를 게시한 후 링크된 주소로 접속할 경우 온라인 설문지에 연락하여 작성하는 방법으로 진행하였다. 온라인 설문은 연구의 목적, 취지, 참가, 참여자 권리, 비밀 보장, 설문지 작성 후 문항으로 불편함을 느낄 경우 휴식을 취한 후 설문지를 작성하도록 안내하였으며, 휴식 후에도 불편감이 있으면 중도에 설문 작성을 중단할 수 있음을 설명하였다. 설문지 작성에 소요된 시간은 10~15분이었고, 설문을 완료한 후 소정의 선물을 증정하였다.

자료 분석 방법
자료 분석은 IBM SPSS for Windows ver. 25.0 (IBM Corp., Armonk, NY, USA)를 사용하였고, 통계적 유의수는 p<.05로 하였으며 구체적 내용은 다음과 같다.

(1) 임부의 일반적 특성과 임신 관련 특성, 모모 관련 지지, 사회적 지지, 임신스트레스에 관한 설수와 백분율, 평균과 표준편차 등 기술통계로 분석하였다.

(2) 임부의 모모 관련 지지, 사회적 지지, 임신스트레스 정도는 평균과 표준편차 등 기술통계로 분석하였고 임부의 특성에 따른 임신스트레스 차이의 독립 t-검정(independent t-test) 및 임원 분산분석(one-way analysis of variance), 사후 분석은 Scheffé test로 분석하였다.

(3) 임부의 모모 관련 지지, 사회적 지지, 임신스트레스 간의 상관 관계는 피어슨 상관계수(Pearson correlation coefficients)로 분석하였다.

(4) 임부의 임신스트레스에 영향을 미치는 요인을 파악하기 위해 입력(entered)방법에 의한 다중회귀분석(multiple regression)으로 분석하였다.

Results
대상자의 특성 및 일반적 특성에 따른 임신스트레스 차이
연구 대상자의 일반적 특성을 살펴보면, 대상자의 평균 나이는 35.24±3.79세로 35세 이상이 46명(31.1%)이었고, 최저 22세에서 최고 42세의 범위를 나타내었다. 임부의 교육 수준은 대졸 이상이 110명(74.3%), 중졸이 있는 경우가 81명(54.7%), 직업이 있는 경우

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가 85명(57.4%). 월평균 수임은 400만원 이상인 경우가 76명(51.3%)으로 가장 많았다. 난평과의 관계는 원만한 경우가 133명
(89.9%), 시댁과의 관계는 원만한 경우가 95명(64.2%), 친정 부모
의 관계는 원만한 경우가 129명(87.2%). 결혼 만족은 만족하는
경우가 123명(83.1%)이었다.

대상자의 임신 관련 특성은 계획임신인 경우가 121명(81.8%)이
 있고 임신 방법은 자연임신이 124명(83.8%)이었다. 임신유전은 단
 태 임신인 경우가 143명(96.6%)이었고, 유산 경험이 없는 경우가
 124명(83.8%)이었다. 대상자의 임신 주수는 평균 18.25±8.28주로
 56.1%가 임신 2기였고, 자녀가 없는 경우가 113명(76.4%)이었으
며 산전 교육 경험은 없는 임부가 88명(59.5%)이었다. 임신 관련
정보 출처는 대중매체가 122명(82.4%)으로 가장 많았고, 이전 임
신에서 산과학 문제가 없는 경우가 122명(82.4%), 현재 임신 동안
산과학 문제가 없는 경우가 102명(68.9%), 임신 전 건강 문제가 없
는 경우가 140명(94.6%)으로 나타났다. 임신 동안 산과학 문제로
는 임신 오조증이 29명(56.9%)으로 가장 많았다.

임신스트레스는 직접(t=-2.42, p=.017), 시댁과의 관계(t=-2.17, 
p=.032), 결혼 만족(t=-3.79, p<.001), 계획임신(t=-2.40, 
p=.022), 임신 주수(F=4.18, p=.017). 임신 관련 정보 출처(t=-3.06,
p=.005)에 따라 유의한 차이가 있는 것으로 나타났다. 사후 분석
결과 임신 1기와 2기 군이 임신 3기 군보다 임신스트레스가 높은
것으로 나타났다(Table 1).

임부의 임신스트레스, 모성 관련 지식 및 사회적 지지 정도

본 연구에서 대상자의 임신스트레스는 평균 23.09±7.11점으로 중
간 정도 수준이었다. 임신스트레스를 가진 임부는 117명(79.1%)으
로 조사되었다. 임신스트레스의 하위영역별 부정적 정서 영역은 평
균 19.94±6.10점이었고, 배우자 참여 영역은 평균 3.16±2.90점
이었다. 모성 관련 지식은 평균 14.42±4.67점으로 중간 수준이었
고, 사회적 지지는 평균 45.88±7.81점으로 약간 높은 수준이었다
(Table 2).

임신스트레스, 모성 관련 지식, 사회적 지지와의 관계

본 연구에서 대상자의 임신스트레스는 사회적 지지와 약한 음의 상
관관계(r=-.37, p<.001)가 있는 것으로 나타났고, 모성 관련 지식
은 사회적 지지와 약간 양의 상관관계(r=.28, p=.001)가 있는 것으
로 나타났다(Table 3).

Table 1. Characteristics of pregnant women and differences in pregnancy stress according to characteristics (N=148)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>n (%) or mean±SD</th>
<th>Pregnancy stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>General characteristics</td>
<td></td>
<td></td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Age (year)</td>
<td>Range, 22-42</td>
<td>32.48±3.79</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 35</td>
<td>102 (68.9)</td>
<td>23.47±7.15</td>
</tr>
<tr>
<td></td>
<td>≥ 35</td>
<td>46 (31.1)</td>
<td>22.26±7.03</td>
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<tr>
<td>Level of education</td>
<td>&lt; High school</td>
<td>13 (8.8)</td>
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<td></td>
<td>College</td>
<td>25 (16.9)</td>
<td>23.44±7.48</td>
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<td></td>
<td>≥ University</td>
<td>110 (74.3)</td>
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<td>Religion</td>
<td>Yes</td>
<td>81 (54.7)</td>
<td>22.19±7.59</td>
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<td></td>
<td>No</td>
<td>67 (45.3)</td>
<td>24.19±6.38</td>
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<tr>
<td>Occupation</td>
<td>Yes</td>
<td>85 (57.4)</td>
<td>21.89±7.70</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>63 (42.6)</td>
<td>24.71±5.93</td>
</tr>
<tr>
<td>Monthly family income (KRW)</td>
<td>&lt; 3 million</td>
<td>14 (9.5)</td>
<td>24.00±6.78</td>
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<tr>
<td></td>
<td>3-4 million</td>
<td>58 (39.2)</td>
<td>23.22±8.53</td>
</tr>
<tr>
<td></td>
<td>≥ 4 million</td>
<td>76 (51.3)</td>
<td>22.83±5.97</td>
</tr>
<tr>
<td>Marital status</td>
<td>Married</td>
<td>143 (96.6)</td>
<td>22.99±7.05</td>
</tr>
<tr>
<td></td>
<td>Unmarried</td>
<td>5 (3.4)</td>
<td>26.20±9.26</td>
</tr>
<tr>
<td>Relationship with husband</td>
<td>Amicable</td>
<td>133 (89.9)</td>
<td>22.81±6.81</td>
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<tr>
<td></td>
<td>Average to not amicable</td>
<td>15 (10.1)</td>
<td>25.60±9.33</td>
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<td>Relationship with in-laws</td>
<td>Amicable</td>
<td>95 (64.2)</td>
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<td>Average to not amicable</td>
<td>53 (35.8)</td>
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<td>Relationship with parents</td>
<td>Amicable</td>
<td>129 (87.2)</td>
<td>22.91±7.08</td>
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<td></td>
<td>Average to not amicable</td>
<td>19 (12.8)</td>
<td>24.32±7.42</td>
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<td>Marital satisfaction</td>
<td>Satisfied</td>
<td>123 (83.1)</td>
<td>22.14±6.57</td>
</tr>
<tr>
<td></td>
<td>Moderate to dissatisfied</td>
<td>25 (16.9)</td>
<td>27.80±7.93</td>
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(Continued to the next page)
Table 1. Continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>n (%) or mean ± SD</th>
<th>Pregnancy stress</th>
<th>n (%) or mean ± SD</th>
<th>t or F (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy-related characteristics</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Planned pregnancy</td>
<td>Yes</td>
<td>121 (81.8)</td>
<td>22.33 ± 6.56</td>
<td>–2.40 (.022)</td>
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</tr>
<tr>
<td></td>
<td>No</td>
<td>27 (18.2)</td>
<td>26.52 ± 8.51</td>
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</tr>
<tr>
<td>Method of pregnancy</td>
<td>Spontaneous</td>
<td>124 (83.8)</td>
<td>23.32 ± 7.37</td>
<td>0.88 (.377)</td>
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<tr>
<td></td>
<td>Assisted reproductive technologies</td>
<td>24 (16.2)</td>
<td>21.92 ± 5.57</td>
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<tr>
<td>Type of pregnancy</td>
<td>Singleton</td>
<td>143 (96.6)</td>
<td>23.05 ± 7.22</td>
<td>–0.42 (.678)</td>
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<td></td>
<td>Multiple</td>
<td>5 (3.4)</td>
<td>24.40 ± 2.61</td>
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<tr>
<td>History of abortion</td>
<td>Yes</td>
<td>24 (16.2)</td>
<td>22.67 ± 7.25</td>
<td>–0.32 (.749)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>124 (83.8)</td>
<td>23.18 ± 7.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gestational period (week)</td>
<td>Range, 4–40</td>
<td>18.25 ± 8.28</td>
<td></td>
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<tr>
<td></td>
<td>1st trimester</td>
<td>48 (32.4)</td>
<td>23.23 ± 7.16</td>
<td>4.18 (.017)</td>
<td>a, b &gt; c ‡</td>
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<td></td>
<td>2nd trimester</td>
<td>83 (56.1)</td>
<td>23.94 ± 6.69</td>
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<tr>
<td></td>
<td>3rd trimester</td>
<td>17 (11.5)</td>
<td>18.59 ± 7.74</td>
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</tr>
<tr>
<td>Number of children</td>
<td>≥ 1</td>
<td>35 (23.6)</td>
<td>23.46 ± 7.80</td>
<td>0.34 (.731)</td>
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<tr>
<td></td>
<td>0</td>
<td>113 (76.4)</td>
<td>22.98 ± 6.92</td>
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<tr>
<td>Experience of prenatal education</td>
<td>Yes</td>
<td>60 (40.5)</td>
<td>24.20 ± 7.32</td>
<td>1.57 (.119)</td>
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<td></td>
<td>No</td>
<td>88 (59.5)</td>
<td>22.34 ± 6.91</td>
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<td></td>
</tr>
<tr>
<td>Main source of pregnancy information</td>
<td>Mass media (internet, pamphlet)</td>
<td>122 (82.4)</td>
<td>24.08 ± 6.28</td>
<td>–3.06 (.005)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family &amp; friends</td>
<td>26 (17.6)</td>
<td>18.46 ± 8.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstetrical complications in previous pregnancy</td>
<td>Yes</td>
<td>26 (17.6)</td>
<td>22.54 ± 7.68</td>
<td>–0.44 (.662)</td>
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<tr>
<td></td>
<td>No</td>
<td>122 (82.4)</td>
<td>23.21 ± 7.02</td>
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<td></td>
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<tr>
<td>Obstetrical complications during current pregnancy</td>
<td>Yes†</td>
<td>46 (31.1)</td>
<td>23.41 ± 7.35</td>
<td>0.37 (.716)</td>
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<td></td>
<td>Hyperemesis gravidarum</td>
<td>29 (26.9)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Gestational diabetes</td>
<td>8 (15.7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIOC</td>
<td>4 (7.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preterm labor</td>
<td>4 (7.8)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Placenta previa</td>
<td>2 (3.9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preeclampsia (eclampsia)</td>
<td>1 (2.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cervical polyp</td>
<td>1 (2.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Miscellaneous</td>
<td>2 (3.9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>102 (68.9)</td>
<td>22.95 ± 7.04</td>
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<tr>
<td>Illness before pregnancy</td>
<td>Yes</td>
<td>8 (5.4)</td>
<td>24.38 ± 3.74</td>
<td>0.52 (.602)</td>
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<tr>
<td></td>
<td>No</td>
<td>140 (94.6)</td>
<td>24.02 ± 7.26</td>
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<td></td>
</tr>
</tbody>
</table>

IIOC: Incompetent internal os of cervix; KRW: Korean won (1 million is approximately 900 US dollars).
† Multiple responses, ‡ Scheffé test.

Table 2. Levels of main variables (N=148)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± SD</th>
<th>Possible range</th>
<th>Data range</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal knowledge</td>
<td>14.42 ± 4.67</td>
<td>0–21</td>
<td>4–21</td>
<td></td>
</tr>
<tr>
<td>Social support</td>
<td>45.88 ± 7.81</td>
<td>12–60</td>
<td>28–60</td>
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</tr>
<tr>
<td>Pregnancy stress (cut-off: &gt; 17)</td>
<td>23.09 ± 7.11</td>
<td>0–48</td>
<td>2–40</td>
<td>117 (79.1)</td>
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<tr>
<td>Negative affect (cut-off: &gt; 12)</td>
<td>19.94 ± 6.10</td>
<td>0–33</td>
<td>2–31</td>
<td>127 (85.8)</td>
</tr>
<tr>
<td>Partner involvement (cut-off: &gt; 7)</td>
<td>3.16 ± 2.90</td>
<td>0–15</td>
<td>0–15</td>
<td>12 (8.1)</td>
</tr>
</tbody>
</table>

임신스트레스에 미치는 영향요인
임신스트레스에 영향을 미치는 요인을 확인하기 위해 대상자 특성 중 임신스트레스에 유의한 차이가 있었던 임부의 직업, 시댁과의 관계, 결혼 만족, 계획임신, 임신 주수, 임신 관련 정보 출처는 더미 변수 처리 과정을 거쳤다. 임신스트레스 관련 요인인 모성 관련 지식, 사회적 지지와 함께 독립변수로 투입하여 다중회귀분석을 실시하였다.
회귀분석에서 기본적으로 검토해야 할 사항으로 선형성 및 등분

https://doi.org/10.4069/kjwhn.2022.02.03
산성을 검정하기 위해 산점도를 확인한 결과, 잔차 분포가 0을 중심으로 균등하게 흘러져 있으므로 가정을 충족하였다. 또한 회귀 표준화 잔차의 정규 P-P 도표를 이용하여 오차의 정규분포를 확인한 결과 45° 직선에 근접해 있으므로 오차는 정규분포를 이룬다고 할 수 있다. 오차의 독립성을 검증하기 위해 Durbin-Watson 통계량을 확인한 결과, 2.137로 2가까운 모형의 오차항 간에 자기 상관성은 없는 것으로 나타났다. 독립변수 간 다중공선성은 공차인자(variance inflation factor: VIF) 지수를 이용하였다. 독립변수 간 VIF 지수는 1.07~1.54로 10 미만이었으며, 공차 한계는 0.65~0.94로 0.1 이상으로 나타나 다중공선성이 문제가 없는 것으로 나타났다.

다중회귀분석 결과 결론 만족(β = -0.18, p = .036), 임신 관련 정보 출처(β = -0.21, p = .011), 사회적 지지(β = -0.19, p = .038)가 임신스트레스에 영향을 미치는 요인으로 나타났으며 회귀모형은 통계적으로 유의한 것으로 나타났다(F = 5.80, p < .001). 이러한 변수가 임부의 임신스트레스를 설명하는 설명력은 22.7%였다. 즉, 임신 관련 정보를 청구와 가족으로부터 얻는 임부, 결혼생활에 만족하는 임부, 그리고 사회적 지지가 높은 임부일 경우 임신스트레스가 낮은 것으로 나타났다. 임부의 임신스트레스에 영향을 미치는 변수에 대한 상대적 중요도는 임신 관련 정보 출처(β = -0.21)가 가장 높았고, 사회적 지지(β = -0.19), 결혼 만족(β = -0.18) 순으로 나타났다 (Table 4).

Table 3. Correlations among pregnancy stress, maternal knowledge, social support (N=148)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pregnancy stress</th>
<th>Maternal knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r (p)</td>
<td>r (p)</td>
</tr>
<tr>
<td>Pregnancy stress</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Maternal knowledge</td>
<td>-0.08 (0.309)</td>
<td>1</td>
</tr>
<tr>
<td>Social support</td>
<td>-0.37 (&lt;.001)</td>
<td>0.28 (0.001)</td>
</tr>
</tbody>
</table>

Discussion

본 연구 대상자의 임신스트레스 점수는 총 48점 만점에서 평균 23.09±7.11점이었다. 동일한 도구인 TPDS를 이용한 타기 임부를 대상으로 한 연구([31,32])에서는 평균 15.72±9.31점, 14.81±7.18점이었고, 네덜란드 임부 396명을 대상으로 임신스트레스를 조사한 연구([33])에서는 평균 12.54±6.6점이었으며, 네덜란드 임부 1,739명을 대상으로 임신 12주, 22주, 32주에 임신스트레스를 측정한 연구([34])에서는 각각 평균 10.7점, 10.3점, 10.9점으로 나타났다. 본 연구 대상자의 임신스트레스는 성명연구의 임신스트레스보다 2배 가량 높은 점수로, 임신스트레스가 매우 높음을 의미한다. 국내에서도 TPDS 도구를 사용한 선행연구가 있어 직접 비교가 힘들고 부분에 논의가 필요하지만, 본 연구에서 임신스트레스를 가진 임부는 총점 17점이 초과된 임부로 79.1%를 차지하였는데 선행연구([33])에서는 19.9%를 차지하는 것으로 나타났다. 본 연구의 대상자는 임신 병증을 가진 임부와 일반 임부 모두를 포함한 총 33명으로 선행연구([31-33])는 임신 병증을 가진 대상자는 제외하고 일반 임부만을 대상자로 하였기 때문으로 여겨진다. 또한 본 연구에서 임신 주수는 임신 1기(32.4%)와 2기(66.1%)보다 3기(11.5%)가 다소 적었고 선행연구([31-33])에서는 임신 1기와 임신 2기, 3기가 90% 이상을 차지하고 있어 임신 주수별 분포가 다르기 때문으로 생각된다. 조기 전통 등 임신 병증을 가진 임부가 정상적인 임부보다 임신스트레스가 높다는 선행연구([20])의 결과와 비교하여 볼 때, 임신 병증을 가진 여성의 정신건강 관리가 매우 필요하다고 하였다. 또한 한국 임부가 임신과 출산에 대한 부담이 크고 정상적으므로 부정적인 감정의 억제와 정서적 전반과 스트레스를 악화시킬 수 있을 것으로 보여 한국 임부와 국외 임부의 임신스트레스를 비교하는 후속 연구가 필요할 것으로 생각된다.

Table 4. Factors influencing pregnancy stress (N=148)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>36.71</td>
<td>3.43</td>
<td>10.70</td>
<td>(&lt;.001)</td>
</tr>
<tr>
<td>Occupation1</td>
<td>-1.87</td>
<td>1.08</td>
<td>-1.13</td>
<td>-1.74 (085)</td>
</tr>
<tr>
<td>Relationship with in-laws1</td>
<td>-0.62</td>
<td>1.17</td>
<td>-0.04</td>
<td>-0.53 (595)</td>
</tr>
<tr>
<td>Marital satisfaction1</td>
<td>-3.48</td>
<td>1.64</td>
<td>-2.18</td>
<td>-2.12 (036)</td>
</tr>
<tr>
<td>Planned pregnancy1</td>
<td>-2.14</td>
<td>1.44</td>
<td>-1.2</td>
<td>-1.49 (138)</td>
</tr>
<tr>
<td>Gestational period (week)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st trimester</td>
<td>0.77</td>
<td>1.21</td>
<td>0.05</td>
<td>0.63 (527)</td>
</tr>
<tr>
<td>3rd trimester</td>
<td>-2.97</td>
<td>1.75</td>
<td>-1.3</td>
<td>-1.68 (093)</td>
</tr>
<tr>
<td>Main source of pregnancy information1</td>
<td>-3.96</td>
<td>1.53</td>
<td>-2.1</td>
<td>-2.59 (011)</td>
</tr>
<tr>
<td>Maternal knowledge</td>
<td>0.08</td>
<td>0.12</td>
<td>0.05</td>
<td>0.68 (495)</td>
</tr>
<tr>
<td>Social support</td>
<td>-0.17</td>
<td>0.08</td>
<td>-1.9</td>
<td>-2.10 (038)</td>
</tr>
</tbody>
</table>

R² = 0.274, adjusted R² = .227, F(df) = 5.80 (<.001)

1References were occupation (no); relationship with in-law (average to not amicable); marital satisfaction (moderate to dissatisfied); planned pregnancy (no); gestational period (2nd trimester); main source of pregnancy information (mass media).
 또한, 임신 기간별로 임신스트레스를 확인한 결과 임신 1기, 2기 가 3기보다 높은 것으로 조사되었다. 임신스트레스를 조사한 선행 연구들의 결과는 모두 일치하지 않고 상반되는 결과를 보이고 있는 데, 많은 연구에서 신체 변화 및 환경의 변화를 겪는 임신 초기와 출산을 앞둔 말기에 임신스트레스가 높음을 알 수 있었지만 [32, 34], 종점에서 임신도가 높은 선행연구[8]에서도 반복 연구가 필요하다. 또한 임산부가 인지한 우울, 불안, 스트레스를 조사한 선행연구[21]에서 임신스트레스의 발생률은 16%로, 불안 71%, 우울 22%에서 이어 높은 변동을 차지하고 있는 것으로 나타나 임신 스트레스 관리의 중요성을 시사해 준다. 따라서 임신 초기, 종기, 말기에 임신스트레스를 사정하고 정확하게 임산부 신체건강 서비스 개선 및 교육 제공을 위한 정책이 필요하다.

본 연구의 임신스트레스 영역별로 살펴보면, 부정적 정서 영역은 평균 19.94±6.10점이었고, 배우자 참여 영역은 평균 3.16±2.90점이었다. 터키 연구 [31, 32]에서는 부정적 정서 영역이 평균 10.31±7.59점과 10.15±6.46점, 배우자 참여 영역이 평균 3.42±3.48점과 4.66±3.16점이었다고 하였고, 네덜란드 연구 [34]에서는 12주, 22주, 32주에 부정적 정서 영역이 각각 평균 6.49점, 6.01점, 6.47점, 배우자 참여 영역이 각각 평균 4.22점, 4.33점, 4.77점으로, 본 연구의 부정적 정서 영역은 선행연구보다 매우 높은 점수로 나타났으나 배우자 참여 영역은 선행연구보다 점수가 낮았다. 이러한 결과는 임신스트레스 중 배우자와의 관계보다는 임신, 출산, 산후 관리에 대한 불안이나 가정에 임신스트레스의 비중에서 크게 차지한다는 것을 드러낸다. 이는 여성들의 심리적 고충을 감소시키기 위해 임신과 출산 관리를 제공하는 건강 전문가들이 임신스트레스 프로그램의 개발 및 중간 시에 심리적 측면에 많은 주의를 기울여야 한다는 의견을 뒷받침해준다.

본 연구에서 대상자의 특성 중 임신 관련 정보 출처가 임신스트레스에 가장 많은 영향을 미치는 요인으로 확인되었고, 첨부가 가족으로부터 정보를 획득할 수 있는 것이 임신증상과 임신 초기에 낮은 것으로 나타났다. 이러한 결과는 임신 과정 동안 자극적 불안과 걱정을 겪지 않기 위해서 임신 및 출산 정보를 획득할 수 있는 것이 임신증상 유발 및 적응하는 데 도움이 되는 과정이라고 본 연구[17]를 지지해 주는 결과라 할 수 있다. 배우자 및 가족의 역할은 임신과 출산 전 기간에 걸쳐 중요하기 때문에 강화할 수 있는 가족, 특히 배우자의 참여를 겪려하는 것이 효과적인 것으로 생각된다. 이를 활성화할 수 있는 구체적인 방안과 적극적인 관심이 필요하다고 보았다. 또한 가족으로부터 정보를 획득할 수 있는 것이 임신스트레스를 감소시킬 수 있기 때문에, 가족 중 누로부터 정보를 얻는지, 그 정보는 어떻게 도움을 되는지 등을 확인하는 것이 필요하다고 조언한다. 더불어 본 연구에서는 임신 관련 정보 출처로 의료진을 포함하지 않았는데, 의료진으로부터 얻은 임신 관련 정보가 임신스트레스에 어떻게 영향을 미치는지 등 후속 연구 방향이 될만한 것으로 평가된다.

 최근 정보화로 인해 임부가 임신, 출산, 산후 과정 동안 정보 획득을 위해 인터넷을 많이 이용하는 등 이러한 정보는 부정확하거나 편정적 지식으로 이루어진 경우가 많다 [17]로, 이에 의한 혼란이 불안과 걱정을 야기하여 더 큰 정신건강 문제의 원인 될 수 있다. 따라서 의료 전문가가 제공하며 신뢰할 수 있는 임신, 출산, 산후 관련 정보를 제공하는 인터넷 기반 시스템을 구축한다면 매우 유용할 것이다.

본 연구에서 임신스트레스 영향요인 중 두 번째는 대상자의 특성 중 결혼 만족도로, 결혼에 만족하는 군이 임신스트레스가 낮은 것으로 나타났다. 본 연구에서는 결혼 만족도를 단일문항으로 조사하였는데, 결혼 만족도를 도구를 이용하여 이러한 측면에서 산후임신과 임신스트레스의 관계 및 원인을 조사하는 반복 연구도 필요할 것으로 보인다.

마지막으로 본 연구에서 사회적 지지는 임신스트레스에 영향을 미치는 요인으로 확인되었는데, 대상자의 사회적 지지가 높은수록 임신스트레스는 낮은 것으로 나타났다. 연구 대상자의 사회적 지지는 평균 45.88±7.81점으로 국내에서 같은 도구를 이용하여 임부 129명의 사회적 지지를 측정한 연구[36]의 평균 48.57±6.85점과, 185명의 임부에게 사회적 지지를 측정한 국외 연구[37]의 평균 43.92±8.5점과 유사한 결과를 보였다. 사회적 지지는 임신과 동안 배우자, 가족, 친구, 전문가 등등 통해 신체적, 심리적, 사회적 안녕을 제공하는 역할을 하기 때문 에 사회적 지지가 필요하다. 사회적 지지 지표로는 개별성, 감사 및 간호중재가 이루어져야 하며, 이는 임신 환경과 임신 중기, 산후 중기의 자주 임신에 더욱 필요할 것으로 생각된다. 또한 사회적 지지가 임신과 가족의 상태가 중요하다는 이유에서, 이는 지역사회, 가족, 친구, 전문가 등 등에 대한 지식이 필요하다고 본 연구에서는 그 의미를 뒷받침해준다.
프로그램에 대한 고려가 필요하다.

본 연구는 임부의 모성 관련 지식, 사회적 지지, 임신스트레스 정도를 파악하고 임신스트레스에 영향을 미치는 요인을 확인하며 임신스트레스를 감소시키기 위한 간호 중재 프로그램의 자료로 제공하고 활용하고자 수행하였다. 연구 대상자인 임부의 임신스트레스는 임신 관련 정보 출처를 친구와 가족으로부터 얻은 군, 결혼에 만족하는 군, 사회적 지지가 높은 군, 임신주수는 10개월 동안 진행되어 변화하는 임신 지원정책을 반영하지 못했다는 제한점이 있다. 본 연구에서 사용한 TPDS 도구는 네덜란드에서 제작한 도구로, 본 연구에서는 도구의 내용 타당도를 확인하며 임신주수의 조사하지 않고, 임신주수의 분류 없이 확인했으며 자료수집이 10개월 동안 진행되어 변화하는 임신지원정책을 반영하지 못했다는 제한점이 있다. 본 연구에서 사용한 TPDS 도구는 네덜란드에서 제작한 도구로, 본 연구에서는 도구의 내용 타당도를 확인하고, 사회적 지지가 임신스트레스에 영향을 미치는 요인을 파악하는 수가 연구가 필요하다고 생각한다.

그러나 본 연구는 임부의 외적 요인인 모성 관련 지식 및 사회적 지지와 내적 요인인 임신스트레스를 포괄적으로 확인하였고, 관계적 요소인 사회적 지지가 임신스트레스에 영향을 미치는 요인임을 확인한 데 의의가 있다고 볼 수 있다. 본 연구 결과를 토대로 임부의 임신스트레스를 감소시키고 나아가 삶의 질을 향상시킬 수 있을 것으로 기대한다.

이상의 결과를 바탕으로, 임부의 임신스트레스에 영향을 미치는 요인을 중심으로 한 간호 중재 프로그램을 개발, 적용하여 효과를 검증하는 연구가 필요하다. 또한 종단연구를 통해 임부의 초기, 중기, 말기 단계별로 임신스트레스의 변화 양상을 확인하고 임신스트레스에 미치는 요인을 파악하는 후속 연구를 제언한다. 더불어 임신한 여성의 내적 요인과 더불어 외적 요인과 함께 다양한 영역에서 임신스트레스에 미치는 요인을 확인할 필요가 있다.

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Authors' contributions
Conceptualization; Formal analysis; Writing-original draft; Writing-review & editing: Kang SJ, Yang MJ.

Conflict of interest
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Data availability
The dataset file is available from Harvard Dataverse at https://doi.org/10.7910/DVN/4DE00F

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Introduction

Pregnancy carries a positive meaning as a normal developmental process that requires a woman's physiological and psychological adaptation. Pregnant women are, nonetheless, vulnerable to a variety of mental health problems may have fears of giving birth or harbor feelings of inadequacy concerning their role as a mother, as well as experiencing mixed feelings and negative thoughts about pregnancy [1-3]. Among these considerations, depression is common among pregnant women, with 25.6% of expectant mothers worldwide experiencing the disease, and contributing to the emergence of a major public health problem [4-6]. In South Korea (hereafter Korea), the rate of depression experienced during pregnancy in 2008 was 26.5% [7], which increased to 41.0% in 2018 [8]—an increase of more than 15% over 10 years. In addition, the incidence of depression during pregnancy—including incidences of mild depression—was reported being as high as 35.9%, with reports suggesting that many Korean women experience moderate depression during pregnancy [9]. In light of these facts, identifying factors associ-
Depression during pregnancy is required. Depression during pregnancy has been identified as a risk factor along with other major health problems that cause problems in fetal development, including premature births, a low birth weight, and the risk of adverse postnatal and cognitive-emotional function development in children [10-13]. In addition, depression may also manifest in children after childbirth [14]. Criticism of the family, or the transmission of depression to the husband [15,16], is known to have a negative impact on familial and social relationships.

Various individual factors have been reported as influencing the likelihood of depression during pregnancy, including a higher age, lower education level, no occupation, lower household income, and lower socioeconomic status [14,17-19]. Pregnancy-related characteristics, including the experience of a miscarriage and history of prepregnancy depression, have also been reported as factors that lead to an increased likelihood of prenatal depression [10,20]. It has also been reported that sleep disturbances, a health behavioral factor, affect prenatal depression [21]. In addition, some studies revealed that poor health status and higher perceived stress levels were associated with higher depression during pregnancy [9,19,22]. As hormonal changes lead to changes in oral conditions in pregnancy, oral health status has also been reported as related to depression [23].

However, in previous studies on factors related to depression in pregnant women, various factors were reported individually [14,17-20], and health behavior factors, were commonly omitted [21]. There are insufficient studies to comprehensively examine the effects of socioeconomic factors, health behaviors, health status, and psychological factors of pregnant women in Korea, using nationally representative data, with the purpose of providing practical evidence-based data that can contribute to the prevention and control of depression during pregnancy.

Methods

Ethics statement: Obtaining informed consent was exempted by the Institutional Review Board of Jeonbuk National University (2021-08-015) for this secondary analysis, because there was no sensitive information and the data were anonymously treated.

Study design

This secondary analysis study used data collected from the 2019 Korea Community Health Survey (KCHS), employing a correlational survey design. The report adhered to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines (https://strobe-statement.org/).
(n = 1) and only complete data were used for final analysis. The data were collected from August 16 to October 31, 2019. KCHS employs trained data collectors and uses the computer-assisted personal interviewing method. Out of the 229,099 subjects who participated in the 2019 survey; data from 1,096 pregnant women were used for final analysis in this study.

**Measurements**

**Depression**
Depression was measured using the Korean version of the Patient Health Questionnaire-9 (PHQ-9) [24]. The PHQ-9 is widely used as a screening tool for major depressive disorders and is known to have high degrees of sensitivity (88%) and specificity (88%) [22], and has been identified as appropriate for assessment in pregnant women [25]. Each of the nine items is scored on a 4 point Likert (not at all, 0 to nearly every day, 3), with higher total summed scores (range, 0–27; none, 0–4; mild, 5–9; moderate, 10–14; moderately severe, 15–19; severe depression, 20–27) indicating greater levels of depression [22]. At the time of development, the Cronbach's α of the PHQ-9 was 0.84 [24]; and for this study, it was 0.79.

**Health behaviors**
Measured health behaviors included skipping breakfast, sleep duration, and binge drinking. For the item ‘How many days have you eaten breakfast in the past week?’, those who ate less than 5 times a week were classified as skipping breakfast. Regarding sleep duration, responses to the question ‘How many hours do you usually sleep in a day?’ were classified as either ‘8 hours or more’ or ‘less than 8 hours.’ Current binge drinking was defined as having answered ‘yes, more than once a week’ to the question ‘How often do you drink more than five glasses (or about three cans of beer) at a single drinking event?’

**Health status**
Health status included subjective health status, subjective oral health status, and unmet medical care. Subjective health and oral health levels were measured on a 5 point Likert (very poor, 1 to very good, 5), with higher average scores (possible range, 1–5) indicating better subjective health and/or oral health. Unmet healthcare needs were defined as ‘yes’ to the question ‘During the past year, did you not go to a hospital for care, despite wanting to?’

**Psychological characteristics**
Stress was measured as a psychological factor. The stress score is calculated by inversely converting the 4-point Likert score (quite a lot, 1 to very little, 4) to the question ‘How much stress do you usually feel in your daily life?’ A higher score indicated a higher level of stress.

**Demographic characteristics**
The general characteristics were age, household monthly income, and level of education. Household monthly income was reclassified into strata of 4 million and greater Korean won (KRW; approximately 3,600 US dollars) or less than 4 million KRW, per month. For educational level, the following options were available: ‘no formal education,’ 'elementary school,’ 'middle school,’ 'high school,’ '2/3-year college,’ '4-year college,’ and 'graduate school or higher.’ Thereafter, the categories were simplified to ‘up to high school’ and ‘junior college graduate or more.’

**Data analysis**
The data were analyzed using IBM SPSS Statistics ver. 21.0 (IBM Corp., Armonk, NY, USA); independent-test and chi-square tests were performed for differences relating to the participants’ characteristics. Cronbach’s a coefficient was calculated so as to verify the reliability of the instrument. Multiple regression analysis was subsequently performed to identify depression-related factors in pregnant women. Considering that the KCHS data is a complex sample design, individual weights were applied for accurate estimation.

**Results**

**General characteristics and research variables of study participants**
The mean age of the participants was 33.9 years. Forty-one percent of respondents reported a monthly household income of less than 4 million KRW. Only 8.1% self-identified as binge drinkers, while 49.4% of participants had skipped breakfast. The mean depression score was quite low at 2.35 points and 4.6% were identified with moderate or higher levels (score of 10–27) of depressive mood. Out of 1 to 5, the mean score of subjective health status was midpoint level (2.58) and slightly higher for oral health status (3.13). Women who experienced unmet healthcare needs accounted for 3.9% and the mean stress score was 1.98 out of 1 to 4, suggesting a roughly midpoint level of stress (Table 1).
Comparison of depression scores by participants characteristics

Correlation analysis revealed a significant positive correlation of moderate strength between depression and stress ($r = .42, p < .001$). Furthermore, there were weak but significant negative correlations between depression and subjective health status ($r = -.26, p < .001$) and subjective oral health status ($r = -.20, p < .001$). Depression scores were significantly higher for households with a monthly household income of less than 4 million KRW ($t = 7.13, p < .001$), for those with final education level of up to junior college ($t = 2.10, p = .037$), women who skipped breakfast ($t = 8.62, p < .001$), slept less than 8 hours ($t = 3.40, p = .001$), engaged in binge drinking ($t = 4.43, p < .001$), and had unmet healthcare needs ($t = 7.10, p < .001$) (Table 1).

Associated factors of prenatal depression

In terms of general characteristics, those with a reported monthly household income of less than 4 million KRW ($B = 0.69, p < .001$) and, up to high school ($B = 0.70, p < .001$) were more likely to be depressed. In health behaviors, depression scores were also more likely in women who skipped breakfast ($B = 0.34, p = .001$), slept less than 8 hours ($B = 0.26, p = .009$), and self-reported as a binge drinker ($B = 0.46, p < .001$). In terms of health status, as scores for subjective health status ($B = -0.59, p < .001$) and subjective oral health ($B = -0.17, p = .003$) increased, the depression score decreased with statistical significance. As for the psychological characteristic, the higher the stress score, the higher the depression ($B = 1.89, p < .001$). The explanatory power of these variables’ ability to explain depression in pregnant Korean women was 24.4%, with the model being deemed suitable (Wald $F = 268.61, p < .001$) (Table 2).

Discussion

The level of depression of this study is lower than a previous

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Table 1. General characteristics of participants and depression by characteristics of participants (N=1,096)

<table>
<thead>
<tr>
<th>Concept</th>
<th>Variable</th>
<th>Categories</th>
<th>Weighted % or mean ± SE</th>
<th>Data range</th>
<th>Possible range</th>
<th>Depression Mean ± SE</th>
<th>t or r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>General characteristic</td>
<td>Age (year)</td>
<td></td>
<td>33.9 ± 0.1</td>
<td>19–55</td>
<td></td>
<td>2.37 ± 0.78</td>
<td>.45</td>
<td>.656</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19–34</td>
<td>59.9</td>
<td></td>
<td></td>
<td>2.32 ± 0.78</td>
<td>.45</td>
<td>.656</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35–55</td>
<td>40.1</td>
<td></td>
<td></td>
<td>2.82 ± 0.09</td>
<td>7.13</td>
<td>.001</td>
</tr>
<tr>
<td>Monthly household income (KRW)</td>
<td>&lt; 4 million</td>
<td>41.3</td>
<td>40.7</td>
<td></td>
<td></td>
<td>2.08 ± 0.05</td>
<td>.20</td>
<td>.037</td>
</tr>
<tr>
<td></td>
<td>≥ 4 million</td>
<td>58.7</td>
<td>2.16 ± 0.10</td>
<td></td>
<td></td>
<td>2.40 ± 0.06</td>
<td>2.10</td>
<td>.037</td>
</tr>
<tr>
<td>Education</td>
<td>Up to high school</td>
<td>22.2</td>
<td>2.80 ± 0.09</td>
<td>8.62</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Junior college or more</td>
<td>77.8</td>
<td>1.90 ± 0.06</td>
<td></td>
<td></td>
<td>2.53 ± 0.07</td>
<td>3.40</td>
<td>.001</td>
</tr>
<tr>
<td>Health behavior</td>
<td>Skipped breakfast</td>
<td>Yes</td>
<td>49.4</td>
<td></td>
<td></td>
<td>2.85 ± 0.11</td>
<td>4.43</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>50.6</td>
<td></td>
<td></td>
<td>2.30 ± 0.06</td>
<td>.26</td>
<td>.001</td>
</tr>
<tr>
<td>Sleep duration (hour/day)</td>
<td>&lt; 8</td>
<td>50.2</td>
<td>2.16 ± 0.08</td>
<td></td>
<td></td>
<td>2.16 ± 0.08</td>
<td>3.40</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>≥ 8</td>
<td>49.8</td>
<td>2.60 ± 0.06</td>
<td></td>
<td></td>
<td>2.16 ± 0.08</td>
<td>.20</td>
<td>.001</td>
</tr>
<tr>
<td>Binge drinking</td>
<td>Yes</td>
<td>8.1</td>
<td>3.69 ± 0.19</td>
<td>7.10</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>91.9</td>
<td>2.27 ± 0.05</td>
<td></td>
<td></td>
<td>3.9 ±</td>
<td>10.4</td>
<td>.001</td>
</tr>
<tr>
<td>Health status</td>
<td>Subjective health status</td>
<td>3.58 ± 0.01</td>
<td>1–5</td>
<td></td>
<td></td>
<td>–.26</td>
<td>.26</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Subjective oral health status</td>
<td>3.13 ± 0.01</td>
<td>1–5</td>
<td></td>
<td></td>
<td>–.20</td>
<td>.20</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Unmet healthcare needs experiences</td>
<td>3.9</td>
<td>3.69 ± 0.19</td>
<td>7.10</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological characteristic</td>
<td>Stress score</td>
<td>1.98 ± 0.01</td>
<td>1–4</td>
<td></td>
<td></td>
<td>2.27 ± 0.05</td>
<td>.42</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Depression score</td>
<td>2.35 ± 0.06</td>
<td>0–23</td>
<td>0–27</td>
<td></td>
<td>.25 ±</td>
<td>.25</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>82.9</td>
<td>0–4</td>
<td></td>
<td></td>
<td>2.35 ± 0.06</td>
<td>.42</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Mild</td>
<td>12.5</td>
<td>5–9</td>
<td></td>
<td></td>
<td>2.35 ± 0.06</td>
<td>.42</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>3.5</td>
<td>10–14</td>
<td></td>
<td></td>
<td>2.35 ± 0.06</td>
<td>.42</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Moderately severe</td>
<td>0.9</td>
<td>15–19</td>
<td></td>
<td></td>
<td>2.35 ± 0.06</td>
<td>.42</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>0.2</td>
<td>20–27</td>
<td></td>
<td></td>
<td>2.35 ± 0.06</td>
<td>.42</td>
<td>.001</td>
</tr>
</tbody>
</table>

KRW: Korean won (1 million KRW is approximately 900 US dollars).
study in Korean pregnant women, which used the Edinburgh Postnatal Depression Scale (EPDS) [18]. Although it is difficult to directly compare prenatal depression levels using different scales, the study of 200 pregnant women in Korea identified 33.5% as having significant depressed mood (EPDS score of ≥10) [18]. This may be due to differences in participant characteristics such as monthly income. In this study, 53.8% had a monthly household income of 4 million KRW or more, which is higher than the previous Korean study (42.5%) [18]. Using the same instrument, however, the depression level (2.35 points) in this study was also lower than in a study conducted in the United States (7.0 points) [26]. Also, using the same cutoff of 10 points and higher, the study on pregnant women in the United States [26] reported a higher proportion (24.9%) of prenatal depression. This difference may be related to this study’s participants being recruited from the community via the probability-proportional phylogenetic extraction method. Furthermore, the United States study reported between 24.9% and 33.2% of participants having concurrent psychological problems such as sleep disorders, anxiety disorders, and post-traumatic stress. This study aligns with prior studies that reported a relatively low level of depression among Korean pregnant women, suggesting that pregnancy itself is perceived as part of a happy life cycle [27], and the fact that pregnant Korean women receive a lot of respect and love from people around them, thus they may perceive pregnancy as a positive process [28]. Nevertheless, depression in pregnant women can cause various health problems, and the proper assessment and management of depression can lead to healthier pregnancy outcomes.

This study identified household monthly income and education level as the sociodemographic characteristics that were associated with depression in pregnant Korean women. This is in line with a study [29] that reported low monthly income being indicative of a high risk of depression throughout pregnancy; another study [30] showed that depression during pregnancy was more frequent in women with a low education level, and that the odds ratio of depression during pregnancy increased among those who are either unemployed or are housewives. Therefore, it is necessary to assess and manage the risk of depression for pregnant women, particularly if they have such vulnerable characteristics. For pregnant women with a low level of education, policy support including health care and service improvement is necessary to avoid prenatal depression.

In addition, breakfast frequency, sleep time, and drinking were identified as health behavioral factors affecting depression in pregnant Korean women. In other words, the depression score decreased significantly with regular breakfast consumption (as ‘more than 5 days’ a week) and with adequate sleep; in the case of binge drinking, which albeit only constituted 8.1% of the sample, the depression score increased significantly. A healthy lifestyle is essential before pregnancy [31], and unhealthy behaviors have been reported to threaten maternal and child health and affect pregnant women [32]. In addition to guidelines for depression screening during pregnancy [33], regular assessment of drinking while pregnant should be reinforced.

A plant-based diet rich in vitamins lowers the risk of prenatal depression [34], while exercise has been shown to also have a positive effect on women's mental health during pregnancy [35]. In order to promote healthy behaviors including better nutrition, more exercise, improved sleep, and less drinking, the commitment and support of healthcare professionals, along with the preparation and education of social and institutional health be-

Table 2. Associated factors of depression in pregnancy (N=1,096)

<table>
<thead>
<tr>
<th>Concept</th>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>95% CI</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td>1.45</td>
<td>0.31</td>
<td>4.73</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>General characteristic</td>
<td>Monthly household income†</td>
<td>0.69</td>
<td>0.11</td>
<td>0.48–0.90</td>
<td>6.45</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Education†</td>
<td>0.7</td>
<td>0.12</td>
<td>0.48–0.93</td>
<td>5.98</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Health behavior</td>
<td>Skipping breakfast†</td>
<td>-0.34</td>
<td>0.10</td>
<td>-0.53</td>
<td>3.48</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Sleep duration†</td>
<td>-0.26</td>
<td>0.10</td>
<td>-0.45</td>
<td>2.68</td>
<td>.009</td>
</tr>
<tr>
<td></td>
<td>Binge drinking†</td>
<td>-0.46</td>
<td>0.13</td>
<td>-0.73</td>
<td>3.46</td>
<td>.001</td>
</tr>
<tr>
<td>Health status</td>
<td>Subjective health status</td>
<td>-0.59</td>
<td>0.07</td>
<td>-0.72 to -0.46</td>
<td>-8.78</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Subjective oral health status</td>
<td>-0.17</td>
<td>0.06</td>
<td>-0.29 to -0.06</td>
<td>-3.06</td>
<td>.003</td>
</tr>
<tr>
<td></td>
<td>Unmet healthcare needs experiences†</td>
<td>0.11</td>
<td>0.16</td>
<td>-0.21–0.43</td>
<td>0.67</td>
<td>.504</td>
</tr>
<tr>
<td>Psychologic characteristic</td>
<td>Stress score</td>
<td>1.89</td>
<td>0.06</td>
<td>1.78–2.01</td>
<td>31.7</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

† The reference groups were as follows: monthly household income (≥4 million Korean won), education (up to high school), skipping breakfast (no), sleep duration (≥8 hours per day), binge drinking (no), and unmet healthcare needs experiences (no).

R² = .244, Wald F = 268.61, p < .001
behavior guidelines, are necessary in Korea. Moreover, this study identified health status factors affecting depression; i.e., subjective and oral health status of expectant mothers. This is similar to another study of Korean women which also identified subjective health status and subjective oral health status as variables related to depression during pregnancy [23]. Subjective health status refers to the perception that one’s health status has changed while experiencing physical changes due to pregnancy. Thus, to reduce depression during pregnancy, it is important to have a positive attitude toward one’s health status. In addition, despite the importance of self-evaluation of oral health status, the majority of adults lack awareness of its importance and are prone to neglect this aspect of their physical well-being, which, in turn, negatively affects one’s overall health [36]. As such, a system that continuously monitors the health and oral health of pregnant women is necessary in order to promote well-being during pregnancy and should include education concerning general health promotion and emphasis on basic oral health [23]. Such emphasis on subjective health and subjective oral health should be offered to all women from the early stages of pregnancy.

This study identified stress as a psychological factor affecting prenatal depression, which supports a prior study [9]. Pregnant women’s stressors include not only the pregnancy itself, but underlying issues of poverty, unemployment, economic status, and relationship changes as well [37]. Improving women’s mental health during the prenatal period is important for both mother and child outcomes [18]. It is necessary to systematically consider the stress of pregnant women during prenatal care, and more attention should be paid to identifying psychological risk factors in pregnant women [38]. As such, this study provides further evidence to check and manage the physical condition of pregnant women and fetuses at prenatal checkups, as well as to implement a stress assessment and management program in order to respond more flexibly to everyday stressors.

This study did not find that the age of pregnant women nor their unmet healthcare needs affected depression. According to previous studies, the prevalence of depression during pregnancy has been reported as increasing among younger women in the United Kingdom [14]; in contrast, that age has no effect on prenatal depression [9]. While this study supports the latter report, Korea has a national health insurance system and Korean pregnant women show high rates (95.2%) of early prenatal care (e.g., first visit before 8 weeks into pregnancy) and overall prenatal care (nearly 100%) [39], which may differ from the United Kingdom [14]. Furthermore, 91.8% of pregnant Korean women had reported not having any unmet healthcare needs during pregnancy [31], which matches this study’s findings; As such, this may be considered in its non-relationship with depression.

A limitations of this study was that stress was the only psychological parameter measured during pregnancy in the data available from KCHS. Future studies reflecting a wider spectrum of positive and negative psychological factors throughout pregnancy are thus required. In addition, as the data available from KCHS data did not allow classification of the pregnancy into the first, second, or third trimester, it was impossible to ascertain differences in depression according to pregnancy period. Another limitation is that although prenatal depression is related to obstetrical characteristics (e.g. parity, miscarriage experience, complications), this information was limited due to the nature of a secondary analysis study. Nevertheless, this study offers significant information on the degree of influence on prenatal depression, using probability-proportional sampled data.

In conclusion, this study using a nationally representative database found that low income and low education level, skipping breakfast, less than 8 hours of sleeping, binge drinking, higher stress, and lower subjective health status and subjective oral health status were influential on depression in pregnant Korean women. Findings support the need for healthcare policies and implementing clinical screening to alleviate prenatal depression, especially for pregnant women with low socioeconomic status, poor health behavior, poor health status, and high stress.

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Authors’ contributions

Conceptualization; Writing-review & editing: Kim EG, Park SK, Nho JH; Formal analysis: Kim EG; Writing-original draft: Kim EG, Nho JH.

Conflict of interest

Ju-Hee Nho has been Associate editor of Korean Journal of Women Health Nursing since 2021. She was not involved in the review process of this manuscript. Otherwise, there is no conflict of interest to declare.
Funding

None.

Data availability

Please contact the corresponding author for data availability.

Acknowledgments

None

References


Association of postpartum depression with postpartum posttraumatic stress disorder in Korean mothers: a longitudinal survey

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²Department of Nursing, Yeoju Institute of Technology, Yeoju, Korea

Purpose: This study aimed to determine the level of postpartum posttraumatic stress disorder (PTSD) and postpartum depression (PPD) in Korean mothers with healthy babies and to explore the factors related to postpartum PTSD.

Methods: This study used a longitudinal survey design to explore the levels and association of PPD and PTSD. Two hundred women were recruited during pregnancy and the data were collected via online survey from 166 mothers (84% retained) who gave birth to healthy babies, at two postpartum periods: Fear of childbirth was assessed at the 1st week; and spousal support, PPD, and postpartum PTSD were surveyed at the 4th week postpartum. Descriptive statistics, t-test, one-way analysis of variance, Chi square test, and multiple regression were done.

Results: The mean age of mothers was 33.12 (±3.97) years old. Postpartum PTSD was low (8.95±6.49) with 1.8% (n=3) at risk (≥19). PPD was also low (6.68±5.28) and 30.1% (n=50) were identified at risk (≥10). The comorbid rate of PPD with PTSD was 6%. Mothers who did not have a planned pregnancy had higher scores of PPD (t=–2.78, p=.008), whereas spousal support and PPD had negative relationship (r=–.21, p=.006). The overall explanatory power for postpartum PTSD was 55.2%, of which PPD was the only significant variable (β=.76, t=13.76, p<.001).

Conclusion: While only 1.8% was at risk of postpartum PTSD at 4 weeks postpartum, PPD prevalence was 30.1% and PPD was the only influential factor of postpartum PTSD. Assessment and counseling of PPD are required as well as screening for postpartum PTSD. More research is also needed on postpartum PTSD in Korean women.

Keywords: Postpartum depression; Post-traumatic stress disorders; Social support; Spouse

주요어: 산후 우울; 외상 후 스트레스장애; 사회적 지지; 배우자
Summary statement

• What is already known about this topic?
  Women experience various physiological and emotional changes during pregnancy and childbirth. While women’s postpartum depression has been studied following childbirth, there is a paucity of research on postpartum posttraumatic stress disorder (PTSD).

• What this paper adds
  Postpartum depression was highly associated with postpartum PTSD in women, and 6% of mothers met criteria for both health problems. While unplanned pregnancy and lower spousal support were related to women’s postpartum depression, only postpartum depression was a strong influencing factor on postpartum PTSD.

• Implications for practice, education, and/or policy
  This study provides initial insight into the prevalence of postpartum depression and PTSD in women. It is necessary to assess not only the levels of postpartum depression but also postpartum PTSD to prevent suffering from mental health problems during postpartum period.

Introduction

Postpartum mental health disorders, particularly postpartum depression and posttraumatic stress disorder (PTSD), are common mental health problems that women experience after childbirth. Postpartum depression and PTSD are characterized by a range of symptoms, including low mood, loss of interest, sleep disturbances, and increased anxiety. Women who experience these disorders may benefit from early identification and treatment to prevent long-term complications.

What is already known about this topic?

1. The prevalence of postpartum depression and PTSD is well-documented in the literature. Postpartum depression is estimated to affect 10% to 20% of women, while PTSD affects 5% to 10% of women after childbirth.

2. The onset of postpartum depression and PTSD can occur at varying times, ranging from immediate postpartum to several weeks or months postpartum. Women who experienced traumatic childbirth, such as vaginal or cesarean deliveries, are at higher risk for developing PTSD.

3. Postpartum depression and PTSD can co-occur, and women with both conditions may experience heightened levels of distress and a greater risk of adverse outcomes for themselves and their families.

4. Women with a history of mental health disorders before pregnancy are more likely to experience postpartum depression and PTSD.

5. Risk factors for postpartum depression and PTSD include younger age, multiparity, lower income, lack of social support, and previous history of mental health disorders.

6. Postpartum depression and PTSD can have significant impacts on women’s ability to care for themselves and their families. Women with these disorders may experience fatigue, irritability, and a decreased ability to perform daily tasks.

7. Women with postpartum depression and PTSD may also experience postpartum anxiety, which can lead to sleep disturbances, increased anxiety, and decreased energy levels.

What this paper adds

This study provides initial insight into the prevalence of postpartum depression and PTSD in women. It is necessary to assess not only the levels of postpartum depression but also postpartum PTSD to prevent suffering from mental health problems during postpartum period.
을 탐색하고자 한다. 산모의 출산경험이 근본적 측면으로 모성기 전반에서 개인의 상황과 회복력 증가를 들 수 있지만, 출산 시 경험한 두려움은 부정적인 출산경험이 이어지면서 산후 PTSD를 높이는 예측요인이다[6,13,18]. 국내 일부를 대상으로 분만 두려움을 사정한 결과 26.5%가 심각한 분만 두려움을 갖고 있었고, 분만 두려움은 산전 우울과 양의 관상관계를 보였다[19]. 나아가 임신 중 분만 두려움, 출산 시 심한 통증, 통제력 부족, 출산경험의 부정적인 인식은 산후 PTSD 발생에 유의한 상관성과 영향력을 나타내었다.

(4) 산후 우울, 출산 시 경험한 두려움, 배우자 지지, 계획하지 않은 임신, 제왕절개 분만이 산후 PTSD에 미치는 영향을 확인한다.

Methods

Research design
본 연구는 산모의 산후 우울과 산후 PTSD의 관련성을 탐색하고 산후 PTSD의 관련 요인(산후 우울, 출산 시 경험한 두려움, 배우자 지지)을 규명하기 위한 상관성 조사연구 설계이다. 본 연구는 임신 기부터 산후까지 우울과 분만 두려움 관련 요인을 탐색하고 산모에서 산후 4주까지 3회에 걸쳐 시행한 단기적 조사연구(longitudinal study)의 일부 자료를 사용하였다. 임신기에 수집한 1차 조사자료는 입산의 분만 두려움 관련 요인 탐색 연구[19]와 본 연구에서는 이에 대해 산후 2회 추가조사를 통해 수집한 산모 자료를 이용하였다. 본 연구는 STROBE 보고지침(https://www.strobe-statement.org)에 따라 기술하였다.

Ethics statement
본 연구는 산모의 산후 우울과 산후 PTSD의 관련성을 탐색하고 산후 PTSD의 관련 요인(산후 우울, 출산 시 경험한 두려움, 배우자 지지)을 규명하기 위한 상관성 조사연구 설계이다. 본 연구는 임신 기부터 산후까지 우울과 분만 두려움 관련 요인을 탐색하고 산모에서 산 후 4주까지 3회에 걸쳐 시행한 단기적 조사연구(longitudinal study)의 일부 자료를 사용하였다. 임신기에 수집한 1차 조사자료는 입산의 분만 두려움 관련 요인 탐색 연구[19]와 본 연구에서는 이에 대해 산후 2회 추가조사를 통해 수집한 산모 자료를 이용하였다. 본 연구는 STROBE 보고지침(https://www.strobe-statement.org)에 따라 기술하였다.

Data analysis
연구 대상
연구 대상은 대전 지역에 소재한 2개의 여성전문병원에서 진강한 만삭아를 출산하고 직접 돌보는 산모를 대상으로 하였다. 본 연구는 국내 임부를 대상으로 분만 두려움을 탐색하고자 한다. 본 연구는 STROBE 보고지침(https://www.strobe-statement.org)에 따라 기술하였다.

(1) 산후 우울, 산후 PTSD, 출산 시 경험한 두려움, 배우자 지지의 상관성을 확인한다.
(2) 산모의 일반적/산과적 특성에 따른 산후 우울과 산후 PTSD의 차이를 검정한다.
(3) 산후 우울, 산후 PTSD, 출산 시 경험한 두려움, 배우자 지지의 관련성을 탐색한다.

https://doi.org/10.4069/kjwhn.2022.02.18
산후 우울

산후 우울은 Edinburgh Postnatal Depression Scale [29]에 대한 한
이 도구는 우울, 화怒, 불안 및 공포, 침체, 자해 사고 등에 대한 자가
보고형의 10문항, 4점 척도로, 각 문항은 "전혀 그렇지 않다"~"매
부분 미안하다" 3점으로 구성된다. 1, 2, 4, 6, 7, 8점 문항은 기존의
나머지 문항은 역 척도로 총점은 30점이며, 점수가 높음수록 우
울한 것으로 평가한다. 국내의 산모를 대상으로 절단점을 9/10로
한 연구 [30]를 근거로 하여 본 연구에서도 절단점을 9/10으로 사
용하였다. 본 도구의 신뢰도는 Cronbach’s α = .82 [29], 한국판 도구에
서는 .84 [30], 본 연구에서는 .85였다.

산후 PTSD

본 연구에서는 Callahan 등 [31]이 5점 척도로 수정한 산후 PTSD
도구에 대한 한국어판 주산기 PTSD 도구 [8]를 이용하여 산후 1개
월째에 측정하였다. 이 도구는 총 14문항의 5점 척도로, 하위 영역
은 아기를 임원에 대한 약물 등 외상의 재경험(1-3문항), 회피
행동(4-9문항), 과격행 및 좌절감(10-14번 문항)으로 구성된다.
각 문항은 "전혀 그렇지 않다"~"매우 그렇다" 4점 척도로 구성한다. 총점
56점 중에서 19점 이상이면 임상적으로 유
의한 PTSD 증상을 보인다고 판단한다. 5점 척도로 수정한 원 도구
의 신뢰도는 .90 [31], 한국판 도구에서는 .87 [8], 본 연구에서는
.76으로 나타났다.

출산 시 경험한 두려움

출산 시 경험한 두려움은 Wijma 등의 산후 분만 두려움 측정 도구
인 Wijma Delivery Experience Questionnaire - version B [32]의 한
국판 분만 두려움 도구 [33]를 이용하여 산후 1주일 시점에 측정하
였다. 이 변수의 측정 시점은 산후 1개월째 아동 1주로 설정한 이
유는 출산 시 경험한 두려움에 대한 생각과 감정이 시간에 갈수록
감소하기 때문에 출산 시 감정이 가능한 발리 반영하기 위해서이다.
이 도구는 33문항의 6점 척도로, "매우 그렇다" 0점부터 "전혀 그
렇지 않다" 5점으로 구성된다. 총점은 165점으로 점수가 높음수록
출산 시 경험한 두려움이 더 강하다는 것을 의미한다. 절단점은 85
점 이상으로, 분만 두려움의 정도를 두려움과 극심한 두려움으로
보았다. 원 도구의 신뢰도는 Cronbach’s α = .86 [32], 한국판 도구
에서는 .90 [33], 본 연구에서는 .89였다.

배우자 지지

배우자 지지는 배우자가 산후 관리와 아기 돌봄을 통해 산모를 지
지한 정도를 측정하는 도구 [34]를 이용하여 산후 1개월 시점에 측
정하였다. 이 도구는 총 13문항의 4점 척도로 "전혀 수행하지 않
음" 1점부터 "매우히 수행함" 4점으로 구성된다. 총점은 13-52점
으로 점수가 높음수록 배우자 지지가 높음을 의미한다. 원 도구의
신뢰도는 Cronbach’s α = .94 [34], 본 연구에서는 .89로 나타났다.

산모의 일반적, 산과적 특성

산후 1주 시점에 산모의 산과적 특성으로 분만 형태(길 분만, 제왕
절개 분만), 아기의 성별, 재태기간, 출생 시 체중, 산모의 주관적
건강상태(좋음, 좋지 않음)에 대해 조사하였다. 산모의 일반적 특성
(나이, 직업, 학력, 가정경제 상태, 산과력, 재태경험여부)은 입신
기 설문조사에 응답한 자료를 사용하였다.

자료 수집

본 연구는 대전 지역에 소재한 2개의 여성전문병원의 병원과 간
호부지에 연구의 목적과 방법을 설명하고 연구 진행에 대한 허락
을 받았다. 자료 수집은 2019년 6월 16일부터 2020년 2월 1일까지
시행하였다. 연구자는 연구 모집 공고문을 병원 외래에 게시하였
고, 공고문을 보고 자발적으로 참여를 원하는 임부를 대상으로
연구의 필요성과 목적을 설명하고 연구 참여를 원하는 임부에게
연구 참여에 대한 서면 동의를 얻었다. 연구자에 자발적 참여와 중도
탈락의 자유를 소개하고 사생활 보호 및 비밀 유지에 대해 설명하
였다. 연구 참여에 동의한 임부들은 산전 관련요인 및 일반적 특성
설문지를 작성하였다. 연구자는 대상자의 추적 조사용 전화번호를
통해 산후조사 시점에 문의를 알림을 사전에 설명하였다. 출산
후 발생한 문제에 응답함 산모에게는 산후 조사를 위한 온라인 설
문조사 링크를 발송하였다. 산후 1주에는 산모의 산과적 특성과 출
산 시 경험한 두려움을 측정하고 산후 1개월에는 산후 우울, 산후
PTSD, 배우자 지지를 측정하였다. 설문에 소요된 시간은 출산 시
점부터 1개월이 10~15분 내외였다. 설문지 작성은 완료한 대상자에게
소정의 답변을 조사 시점별로 제공하였다.

자료 분석 방법

수집된 자료는 IBM SPSS ver. 24.0 for Windows (IBM Corp.,
Armonk, NY, USA)를 이용하여 분석하였으며 통계적 유의 수준은
α = 0.05로 설정하였다.
(1) 대상자의 일반적, 산과적 특성, 산후 우울, 산후 PTSD, 출산 시
경험한 두려움, 배우자 지지에 대한 수준은 변동분석과 기술통
계를 이용하여 분석하였다.
(2) 대상자 일반적, 산과적 특성에 따라 산후 우울과 산후 PTSD에
대한 차이 검정은 t-test, 일원분산분석(one-way analysis of
variance), 또는 카이제곱검정, 필요 시 Fisher exact test로 분석
하였다.
(3) 출산 시 경험한 두려움, 산후 우울과 산후 PTSD 발생률의 관계
는 카이제곱검정(Fisher exact test)로 분석하였고, 출산 시 경험
한 두려움, 배우자 지지, 산후 우울, 산후 PTSD의 관련성은 상

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Results

Table 1. Differences in postpartum depression and PTSD by participant characteristics (N=166)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>n (%) or mean ± SD</th>
<th>Postpartum depression</th>
<th>Postpartum PTSD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Age (year)</td>
<td>&lt;35</td>
<td>111 (66.9)</td>
<td>7.13 ± 0.52</td>
<td>1.68 (094)</td>
</tr>
<tr>
<td></td>
<td>≥35</td>
<td>55 (33.1)</td>
<td>5.76 ± 0.61</td>
<td></td>
</tr>
<tr>
<td>Employment status</td>
<td>Yes</td>
<td>77 (46.4)</td>
<td>6.75 ± 5.47</td>
<td>0.16 (870)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>89 (53.6)</td>
<td>6.61 ± 5.14</td>
<td></td>
</tr>
<tr>
<td>Level of education</td>
<td>Up to high school</td>
<td>14 (8.4)</td>
<td>5.14 ± 3.99</td>
<td>-1.13 (257)</td>
</tr>
<tr>
<td></td>
<td>University or more</td>
<td>152 (91.6)</td>
<td>6.82 ± 5.37</td>
<td></td>
</tr>
<tr>
<td>Monthly family income (KRW)</td>
<td>&lt;2 million</td>
<td>7 (4.2)</td>
<td>6.71 ± 5.67</td>
<td>1.02 (360)</td>
</tr>
<tr>
<td></td>
<td>2 million–3.99 million</td>
<td>89 (53.6)</td>
<td>6.14 ± 5.08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥4 million</td>
<td>70 (42.2)</td>
<td>7.35 ± 5.49</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td>Primipara</td>
<td>68 (41.0)</td>
<td>6.32 ± 5.32</td>
<td>-0.72 (470)</td>
</tr>
<tr>
<td></td>
<td>Multipara</td>
<td>98 (59.0)</td>
<td>6.92 ± 6.92</td>
<td></td>
</tr>
<tr>
<td>Planned pregnancy</td>
<td>Yes</td>
<td>56 (33.7)</td>
<td>5.17 ± 4.70</td>
<td>-2.78 (008)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>110 (66.3)</td>
<td>7.44 ± 5.42</td>
<td></td>
</tr>
<tr>
<td>Type of birth</td>
<td>Vaginal birth</td>
<td>131 (78.9)</td>
<td>6.67 ± 5.20</td>
<td>-0.04 (966)</td>
</tr>
<tr>
<td></td>
<td>Cesarean birth</td>
<td>35 (21.1)</td>
<td>6.71 ± 5.67</td>
<td></td>
</tr>
<tr>
<td>Mothers’ perceived health</td>
<td>Healthy</td>
<td>161 (97.0)</td>
<td>6.60 ± 5.24</td>
<td>-1.08 (281)</td>
</tr>
<tr>
<td></td>
<td>Not healthy</td>
<td>5 (3.0)</td>
<td>9.20 ± 6.72</td>
<td></td>
</tr>
<tr>
<td>Infant’s sex</td>
<td>Male</td>
<td>102 (61.4)</td>
<td>6.62 ± 5.18</td>
<td>-0.16 (870)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>64 (38.6)</td>
<td>6.77 ± 5.48</td>
<td></td>
</tr>
<tr>
<td>Infant’s gestational age (week)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant’s birth weight (kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

KRW: Korean won (1 million KRW is approximately 900 US dollars), PTSD: posttraumatic stress disorder.
반면, 중등도 이상의 두려움을 경험한 여성의 25.7%가 산후 우울군에 속하였다. Fisher exact test로 변수 간 관련성을 검정한 결과, 심각한 출산 두려움 경험과 산후 우울은 유의한 관련성을 나타냈다 ($p = .006$). 심각한 출산 두려움을 경험한 여성 중 9.1%가 산후PTSD를 경험한 반면, 중등도 이상의 두려움이 있는 경우에는 0.7%의 여성이 산후PTSD를 경험하였다. 검정 결과 심각한 출산 두려움과 산후PTSD는 유의한 관련성을 보였다 ($p = .002$). 산후 우울은 50명(30.1%) 중에서 산후PTSD 위험군에 속하는 여성은 3명(6.0%)으로 나타난 반면, 산후 우울이 없는 산모에서는 산후PTSD가 한 건도 발생하지 않았다. 검정 결과 산후 우울과 산후PTSD 간 유의한 관련성을 확인하였다 ($p = .026$) (Table 3).

산후 우울, 산후PTSD, 출산시 경험한 두려움, 배우자 지지간 관계 상관분석을 통해 연구 변수 간 관련성을 탐색한 결과, 산후PTSD는 산후 우울과 높은 양의 상관($r = .75, p < .001$)을 보였고, 산후 우울은 배우자 지지($r = -.21, p = .006$)와 약한 음의 상관을 보였다 (Table 4).

산후PTSD에 영향을 미치는 요인
문헌고찰에서 산후PTSD에 영향을 보인 계획임신 여부, 출산 방 법, 배우자 지지, 출산 시 경험한 두려움, 산후 우울을 독립변수로 입력하여 산후PTSD에 영향을 미치는 요인을 탐색하였다. 회귀식의 가정(정규성, 선형성 다중공선성)과 잔차 진단(잔차의 정규성, 오차의 독립성, 등분산성)을 통해 자료의 적합도를 확인하였다. Durbin-Watson 값이 1.88으로 기준 2에 가까워 오차의 독립성을 확보하였다. 독립변수의 다중 공선성은 공차 한계와 분산팽창계수로 확인한 결과, 공차 한계 값은 0.77–0.99, 분산팽창계수 값은 1.00–1.29의 범위에 있어 다중공선성의 문제가 없는 것으로 나타났다. 회귀식의 적합도를 검정한 결과, 회귀식이 유의하였고 ($F = 41.60, p < .001$) 설명력은 55.2%로 나타났다. 독립변수 중 산후-
우울이 유의한 설명요인으로 나타났다(β = .76, t = 13.76, p < .001). 즉 산후 우울 점수가 높을수록 산후 PTSD 점수가 상승하였다(Table 5).

### Discussion

산후 1개월째인 산모의 산후 우울 발생률(절단점 10점 기준)은 30.1%로 나타났다. 이는 동일 도구와 절단점으로 평가한 중단기 연구에서 보고한 산후 2주째(32.0%)와 6주째(23.6%) [28], 산후 6주째인 초산모의 유병률(14.6%) [35]과 비교 시 높은 비율이다. 또한 국외 연구의 메타분석에서 산후 1–6주 산모에게 동일 도구의 절단점 13점으로 평가한 유병률(9.3%–18.5%) [3]보다 높다. 이는 산후 우울을 측정한 산후 2–6주 시점이 대부분의 산모가 가장 신생아 양육을 직접 수행하는 시기이고, 초산 여부와 산 후 문화에 따라 산모의 모성 직무를 위한 사회적 지지의 양이 적어도 시기라하는 점이 우울 발생률에 영향을 미친 것으로 보인다 [3,35,36].

산모의 산후 PTSD 점수는 8.95로 낮은 수준이었다. 이는 산후 4–6주에 진간한 만삭아를 기우는 산모가 보고한 점수(9.10) [8]와 비교 시 안정감 낮은 편이다. 반면 국외 연구에서 보고한 점수(8.25) [13]보다는 높게 나타났지만, 이런 점수 차이는 대상자의 인종이나 출산 및 산후 관리에 대한 문화적 차이 때문이라고 본다. 산모의 1.8%는 임상적으로 의미 있는 PTSD군으로 분류되었다. 이는 강경한 만삭아를 출산한 1개월째 된 우리나라 산모에서의 발생률 (7.5%) [8]과 비교 시 낮은 비율이다. 국외 연구에서 출산 관련 PTSD 발생률은 메타분석 결과 3.1% [6], 산후 6개월째 독립한 산모에서 2.3% [35], 산후 6–8주째 중국인 산모에서 6.1% [37]로 각기 다르게 나타났다. 이 이유는 산후 PTSD 측정 시점이 연구마다 다른 것과, 인종·지역 및 사회문화적 특성에 따라 출산 환경에 차이가 있기 때문으로 보인다 [24,27].

산후 우울군과 산후 PTSD군에 모두 속하는 여성은 6.0%로 나타났다. 이는 미국인 산모에서 산후 우울과 산후 PTSD가 동반된 비율(17.5%) [16]과 비교 시 낮은 수준이다. 이 이유는 본 연구의 경우 산후 1개월째에 측정한 반면, 국외 연구에서는 산후 6개월째에 정기 효과를 측정하였기 때문으로 보인다. 본 연구에서 확인한 심각한 출산 두려움 경험, 산후 우울 및 산후 PTSD 발생의 관련성은 출산에 대한 심각한 두려움을 경험한 경우 산후 PTSD 점수가 높게 나타난 연구 [18]와 부정적 출산경험이 산후 PTSD에 유의한 영향을 미친 연구 [13,27,37]를 지지하였다. 이는 산모의 정신건강을 사정할 때 출산 시 경험한 두려움을 산후 우울과 산후 PTSD와 더불어 평가하는 것이 중요함을 시사한다.


### Table 4. Relationships among postpartum PTSD, postpartum depression, fear of childbirth, spousal support, birth type and planning of pregnancy (N=166)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Postpartum PTSD</th>
<th>Postpartum depression</th>
<th>Fear of childbirth experienced</th>
<th>Spousal support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spousal support</td>
<td>.405 (p &lt; .01)</td>
<td>.01 (.881)</td>
<td>.03 (.684)</td>
<td>.13 (.092)</td>
</tr>
</tbody>
</table>


### Table 5. Factors influencing postpartum posttraumatic stress disorder (N=166)

<table>
<thead>
<tr>
<th>Factor</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postpartum depression</td>
<td>.76</td>
<td>13.76</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Spousal support</td>
<td>.04</td>
<td>.83</td>
<td>.405</td>
</tr>
<tr>
<td>Fear of childbirth experienced</td>
<td>.01</td>
<td>.21</td>
<td>.832</td>
</tr>
<tr>
<td>Type of birth†</td>
<td>-.05</td>
<td>-.109</td>
<td>.276</td>
</tr>
<tr>
<td>Planned pregnancy†</td>
<td>.01</td>
<td>.15</td>
<td>.881</td>
</tr>
<tr>
<td>F(ρ)</td>
<td>41.60</td>
<td>&lt; .001</td>
<td></td>
</tr>
</tbody>
</table>

Adjusted R² = .552

†The indicator groups were as follows: type of birth (cesarean birth) and planned pregnancy (no).
로만 수집하였기에, 제왕절개 분만 중 예상치 못한 응급 제왕절개
분만 시행 여부에 대한 자료를 수집하지 못하여 이를 반영할 수 없
았다. 추후 연구에서 분만 유형별 세부 정보를 수집하여 그 관계성을
적용할 필요가 있다.

계획하지 않은 임신을 한 여성은 계획임신을 한 경우에 비해 산
후 우울 점수가 유의하게 높았다. 계획하지 않은 임신이 산후 PTSD에 미치는 영향력이 없었다. 그 이유는 임신과 출산을 거치는 동안 계획하지 않은 임신보다는 출산 경험과 산후 우
울상태와 같은 최근의 감정 상태가 산후 PTSD에 더 강한 영향을
보이기 때문[16]이라 생각한다.

산후 PTSD는 산후 우울과 높은 상관을 보였고, 회귀분석에서
산후 우울이 산후 PTSD를 설명하는 강력한 영향요인으로 나타났
다. 이는 산후 우울이 출산 후 PTSD를 유의하게 예측하는 설명요인
[13-16,37,38]로 일치한다. 이 결과는 산후 PTSD와 우울 모두 부
정적인 기본 상태를 포함하기에 산후 PTSD의 증상을 산후 우울로
 쉽게 오인할 수 있다는 설명요인 결과[1]를 지지하는 것이다. 이를
도모로 산후 우울과 산후 PTSD를 사정하고 두 가지 문제의 동반
발생을 경험하는 산모를 선별하는 기준에 중요하다. 간호사는
산후 우울과 산후 PTSD 위험군을 조기 발견하여 이들을 정확한
진단 및 치료 단계로 연계할 수 있어야 할 것이다.

본 연구는 한 지역에서 편의 표집한 건강한 아기를 출산한 산모를
대상자로 하였기에, PTSD 발생률을 해석할 때 주의를 기울여야 한
다. 추후 더 큰 표본 수를 확보하여 임신에서 산후까지 관련 요인을
고려하면 산후 우울과 PTSD 관계를 확인하는 반복 연구가 필요
하다. 그러나 본 연구는 건강한 신생아를 기준으로 산모에서 산후 우
울과 산후 PTSD 관련성이 높고, 산후 우울군 속에 산후 PTSD군이
6% 존재할을 확인함으로써 산후 우울을 가진 산모들에게 산후
PTSD도 함께 사정해야 하는 근거를 확보한 점에서 의미가 있다.

결론적으로 본 연구에 참여한 산모의 30.1%가 산후 우울을, 산
모의 1.8%가 산후 PTSD를 나타냈고, 산후 PTSD의 유의한 영향
요인은 산후 우울로 확인되었다. 본 연구는 정상 임신과 출산을 경
험한 산모를 대상으로 산후 PTSD의 영향요인을 파악하였기에, 추
후 연구에서는 고위험 임신을 경험한 산모를 대상으로 임신, 출산
및 산후 특성이 산후 우울과 산후 PTSD에 미치는 영향을 탐색할
필요가 있다. 또한 실험에서 출산 후 감정 특성으로 보고된 산모에게 산후 우울과 PTSD를 사정하고, 산후 우울과 PTSD의 예
방과 조기 관리를 위한 정신건강 상담이나 중재 의뢰가 요구된다.

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Conceptualization, Formal analysis: Cho H, Ahn S; Data collection: Cho H, Koh M, Yoo H; Writing—original draft: Cho H, Ahn S; Writing—review & editing: Cho H, Koh M, Yoo H, Ahn S.

Conflict of interest

Sukhee Ahn has been statistical editor of Korean Journal of Women Health Nursing since 2020. She was not involved in the review process and has no other conflicts of interest to declare.

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Data availability

Please contact the corresponding author for data availability.

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References


Factors influencing quality of life in low-income women with young children in Korea: a cross-sectional study

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Introduction

The incidence of poverty is an indicator of the state of communities and society, as well as critically affecting family and individual well-being. The Gini coefficient, representing income inequality, was 0.34 for Korea in 2020 ranking 11th out of 40 countries, and Korea's employment rate was 67.2%, evaluated lower than Canada (74.8%) and the United States (70.5%) [1]. With the income gap widening as the number and rate of beneficiaries receiving basic livelihood security increases, continuous attention is required to prevent health inequality developing among those on low-income due to polarization.

Women play a key role in a family and their quality of life (QoL) will be more important when they are in a low-income situation. In a Hong Kong study comparing low-income households living in cities with their more affluent counterparts, the QoL of low-income households was poorer [2]. QoL of married working women differed in relation to income; the lower the income, the lower the QoL [3]. The QoL score of mothers caring for young children has also been reported as lower than that of

Purpose: This study aimed to investigate the effects of health-promoting behaviors (HPB), marital intimacy, and parenting stress on the quality of life (QoL) of low-income women with young children in Korea, an underserved group.

Methods: This cross-sectional survey employed a descriptive correlational design. Using convenience sampling, 123 low-income women with children younger than 6 years were recruited from 14 health and community centers in Jeonju, Korea, from June 2020 to May 2021. Participants completed a questionnaire on QoL, HPB, marital intimacy, and parenting stress. Data were analyzed using descriptive statistics, independent t-test, analysis of variance, Pearson correlation, and hierarchical regression analysis.

Results: Participants, who were on average 37.41±3.65 years old and had 1 to 2 children (n=98, 79.7%), reported a mid-level (3.14 out of 1–5) of QoL. Marital intimacy (β=.38, p.<0.001) was the most influential factor on the QoL of low-income women with young children. In descending order, HPB (β=.35, p.<0.001) and non-employment status (β=–.21, p.=.003) had a significant influence on QoL (F=15.64, p.<0.001), and the overall explanatory power was 49.0%.

Conclusion: Considering the mid-level QoL of low-income women with young children, programs aimed at improving the QoL of low-income women need to promote marital intimacy and maintain HPB, while considering their employment status. Strategies that include couple counseling, health care to encourage healthy lifestyles, and reemployment education are needed.

Keywords: Child; Life style; Psychological distress; Quality of life; Women
women not caring for children \([4,5]\). In particular, low-income mothers with children have a lower QoL \([4]\); thus, strategies to identify and improve their QoL are needed. The relationship between the socioeconomic status of American mothers with child and the occurrence of cardiovascular disease and myocardial infarction shows that women’s economic status affected their health status \([6]\). In addition, in a study of 11,247 adults in Australia, lower education levels and lower income among women were related to higher levels of fasting insulin and triglycerides, and increased waist circumference, which contrasted with men \([7]\). Vulnerable women without insurance were also noted to have unhealthy lifestyle factors: 42% were smokers, 75% were overweight or obese, and approximately half had chronic disease risk factors \([8]\). These results suggest that low-income women struggle to maintain a healthy lifestyle in terms of their own physical health, and that their socially and economically vulnerable status often leads to greater exposure to lifestyle-related diseases. Factors such as alcohol consumption, smoking, and lack of exercise in women can significantly influence their QoL \([9]\). As such, for low-income women, health-promoting behaviors (HPB) need to be considered as a major variable affecting QoL in relation to health maintenance.

For women in marital relationships, marital intimacy has been shown to be positively correlated with QoL \([10]\), in areas such as communication, mutual respect, sexual life, leisure activities, marital satisfaction, and emotional expression. However, for low-income couples, trying to deal with economic pressure can hinder coping with conflict and expressing intimacy in marital relationships \([11]\). Therefore, marital intimacy can be considered as a variable that has a major influence on women’s QoL in terms of relational aspects.

Stress is also a major influencing factor on QoL of adult women \([12]\). Specifically, parenting stress is an important factor in mothers’ health management during the period of marriage, pregnancy, and childbirth \([13-15]\). Through marriage, marital intimacy, parenting, and personal aspects of life can exert influence, and parenting stress due to maternal role demands is reported as one of the risk factors in the family environment among low-income mothers \([16]\).

Despite the high importance of HPB, marital intimacy, and parenting stress among low-income women with children, studies on low-income women caring for young children in Korea are lacking. The purpose of this study was to identify the HPB, marital intimacy, parenting stress, and QoL of low-income women with young children, and to examine the influencing factors on QoL. The specific research objectives were as follows: (1) determine the levels of and relationships among HPB, marital intimacy, parenting stress, and QoL of low-income women with young children, and to examine the influencing factors on QoL. The specific research objectives were as follows: (1) determine the levels of and relationships among HPB, marital intimacy, parenting stress, and QoL of low-income women with young children, and to examine the influencing factors on QoL. The specific research objectives were as follows: (1) determine the levels of and relationships among HPB, marital intimacy, parenting stress, and QoL of low-income women with young children, and to examine the influencing factors on QoL.

Methods

Ethics statement: This study was approved by the Institutional Review Board of Jeonbuk National University (No. 2020-05-006-004). Informed consent was obtained from the participants.

Study design
This study used a descriptive correlational research design aimed to identify factors affecting QoL in low-income women with young children through a cross-sectional survey. This study was described in accordance with the STROBE (Strengthening the...

Participants
The participants of this study were low-income women with young children. The inclusion criteria were as follows: (1) medical benefit recipients or basic livelihood recipients with a monthly household income below 50% of the South Korean national median income, i.e., about 2.4 million Korean won (four persons) for 2020 (approximately 1,900 US dollars) [17]; (2) women with children aged less than 6 years; and (3) those understanding the purpose of the study and agreeing to participate. The exclusion criteria were as follows: (1) women currently pregnant, (2) having a psychiatric condition or on medication, (3) being in a single-parent family or a multicultural family, (4) women without spouses, and (5) having a child requiring long-term care, such as developmental diseases.

Study size
The G*Power 3.1.9 program [18] was used to calculate the appropriate number of participants required, based on power (1-β) .80 and a median effect size of .15 based on previous studies [19,20], and significance level (α) of .05. When 11 predictors (age, education level, employment status, monthly income, religion, type of family, number of children, husband’s parental attitude, HPB, marital intimacy, and parenting stress) were input, a minimum of 123 participants were required. Questionnaires were distributed to 150 women considering a dropout rate of 20%, and data from 123 participants (82.0%) were analyzed after excluding refusals (n = 17), incomplete data (50% or more blank, n = 3), and ineligible cases (no children, n = 7).

Setting and data collection
Participant recruitment and data collection were conducted from June 6, 2020 to May 6, 2021. The researchers advertised study recruitment at two health centers and 12 community centers in Jeonju, Korea. Considering the vulnerable status of participants it was explained that participants could withdraw from the study at any time, the collected data would be used only for research, and that confidentiality of personal information would be guaranteed. Participants filled out the self-report questionnaire in an office at the center or cafe where privacy was maintained. The questionnaire took approximately 20 to 30 minutes and a gift certificate (worth 4 US dollars) was given as a token of appreciation.

Health-promoting behaviors
HPB was measured using the Korean version [22] of the Health-Promoting Lifestyle Profile-II (HPLP-II) developed by Walker et al. [23] after obtaining permission. This measurement consists of a total of six subdomains and 52 items, including for health responsibility (nine items), physical activity (eight items), nutrition (nine items), spiritual growth (nine items), interpersonal relationships (nine items), and stress management (eight items). Each item is scored on a 4-point Likert scale (‘not at all,’ 1 to ‘all the time,’ 4); and the higher the summed score (possible range, 52–208), the more positive the response to the HPB. The Korean version of the HPLP-II has well-established validity and reliability [22]. Cronbach’s α coefficients for the total score were .93 in the Korean version [22], and .94 in the current study.

Marital intimacy
Marital intimacy was measured using the 15-item Marital Intimacy tool [24], which was developed in Korean. The subdomains (five items each) consist of cognitive, emotional, and sexual intimacy and items are assessed using a 5-point Likert scale (‘not at all,’ 1 to ‘strongly agree,’ 5). Higher summed scores (possible range, 15–75) indicate greater marital intimacy. At the time of development, Cronbach’s α was .90; and in this study, it was .86. Permission was obtained prior to use.

Parenting stress
The Korean version of the Parenting Stress Index-Short Form-4th edition (PSI-SF-4) [25] was purchased (https://inpsy.co.kr/psy/item/view/KPSI4_CO_PG) and used. The PSI-SF-4 con-
sists of 36 items in three subdomains: parental distress, parent-child dysfunctional interaction, and difficult child. Each item is rated on a 5-point Likert scale (‘strongly disagree,’ 1 to ‘strongly agree,’ 5), and higher summed scores (possible range, 36–180) indicate higher parenting stress. The Korean version of the PSI-SF-4 had Cronbach’s α of .96 [26]; and in the current study, it was .92.

General characteristics
General characteristics included age, education level, employment status, monthly income, religion, type of family, number of children, and husband’s parental attitude (passive, moderate, or active).

Data analysis
The collected data were statistically processed using IBM SPSS ver. 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were done and variations in QoL according to general characteristics were analyzed using independent t-tests and one-way analyses of variance followed by the Scheffé test. Pearson correlation analysis was done to identify the relationships between QoL and other variables and hierarchical regression analysis was used to investigate influencing factors on QoL.

Results
Participants’ general characteristics and quality of life according to general characteristics
Participants’ mean age was 37.41 years, 74 (60.2%) had a bachelor degree or more and 65 (52.8%) were currently unemployed. Most participants (n = 107, 87.0%) had a mean monthly household income between 2 million and 3 million Korean won (approximately 1,800–2,700 US dollars). Having two children was most common (n = 67, 54.5%) and five participants (4.1%) had four or more. As for the husband’s parental attitude, 87.8% showed an attitude ‘moderate or active.’

Participants with a university degree or higher had significantly higher QoL than those who had a high school education or less (F = 4.51, p = .013), and employed women had significantly higher QoL than unemployed women (t = 3.37, p < .001). In addition, the levels of QoL were statistically significantly different according to husband’s parental attitude (F = 5.50, p = .005) (Table 1).

Levels of quality of life, health-promoting behaviors, marital intimacy, and parenting stress
The mean score of QoL was midpoint at 3.14, with the highest sub-score noted in physical health QoL (13.01 ± 2.41). HPB was close to midpoint at 120.56 and marital intimacy was greater than midpoint at 50.38. Parenting stress was relatively low at 77.17 (Table 2).

The relationships among quality of life, health-promoting behaviors, marital intimacy, and parenting stress
QoL showed a positive moderate correlation with HPB (r = .57, p < .001) and marital intimacy (r = .56, p < .001), and a negative weak correlation with parenting stress (r = –.23, p = .010). For HPB, a positive moderate correlation with marital intimacy (r = .40, p < .001) and a negative weak correlation with parenting stress (r = –.25, p = .005) was also noted (Table 3).

Factors influencing quality of life
For hierarchical regression analysis, based on previous studies [9,10,12,16,27,28], the main variables were entered as the first model for general characteristics that showed differences in QoL, the second model for HPB as an individual factor, the third model for marital intimacy as relationship with spouse, and the fourth model for parenting stress as family relationship. To confirm the residual normality, the residual histogram, residual normal probability graph, and residual homoscedasticity graph were checked, and the results were found to be satisfactory. Cook’s distance was less than 1.0, at 0.00 to 0.17; thus, no cases needed to be deleted. The Durbin-Watson value was close to 2, at 2.12, indicating independence between individuals. The variance inflation factor values were less than 10, at 1.09 to 3.36, and the tolerance ranged from 0.29 to 0.92, which was more than 0.1, confirming no multicollinearity between the variables, and that the conditions for regression analysis were satisfied.

The dummy variables were educational level (≤ high school), occupation (employed), and husband’s parental attitude (passive), based on the findings in Table 1. Model 1 showed that general factors explained 17.0% of the variance in QoL in low-income women with a young child. In model 2, HPB (β = .49, t = 6.56, p < .001) significantly influenced QoL and the explanatory power increased to 39.0%. In model 3, the explanatory power increased to 49.0% and marital intimacy (β = .38, t = 5.08, p < .001) exerted the greatest influence on QoL, followed by HPB (β = .35, t = 4.72, p < .001) and employment (β = –.21, t = –3.08, p = .003). In model 4, although parenting stress (β = –.01, t = –2.0, p = .044) did not significantly influence QoL, marital intimacy (β = .38, t = 4.88, p < .001), HPB (β = .35, t = 4.62, p < .001) and employment (β = –.21, t = –3.07, p = .003) were significant influencing factors.

Thus, the total explanatory power of QoL in low-income wom-
Table 1. Quality of life by participants' characteristics (N=123)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Mean ± SD or n (%)</th>
<th>Quality of life Mean ± SD</th>
<th>t/F (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (year)</strong></td>
<td>&lt; 30</td>
<td>2 (1.6)</td>
<td>3.60 ± 0.52</td>
<td>1.40 (.266)</td>
</tr>
<tr>
<td></td>
<td>30–39</td>
<td>83 (67.5)</td>
<td>3.10 ± 0.52</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 40</td>
<td>38 (30.9)</td>
<td>3.21 ± 0.57</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>≤ High schoola</td>
<td>11 (8.9)</td>
<td>2.84 ± 0.54</td>
<td>4.51 (.013)</td>
</tr>
<tr>
<td></td>
<td>Collegeb</td>
<td>38 (30.9)</td>
<td>3.01 ± 0.56</td>
<td>a &lt; c†</td>
</tr>
<tr>
<td></td>
<td>≥ Universityc</td>
<td>74 (60.2)</td>
<td>3.25 ± 0.50</td>
<td></td>
</tr>
<tr>
<td><strong>Employment status</strong></td>
<td>Employed</td>
<td>58 (47.2)</td>
<td>3.31 ± 0.49</td>
<td>3.37 (.001)</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>65 (52.8)</td>
<td>3.00 ± 0.54</td>
<td></td>
</tr>
<tr>
<td><strong>Monthly income (KRW)b</strong></td>
<td>&lt; 1 million</td>
<td>5 (4.1)</td>
<td>2.76 ± 0.47</td>
<td>2.00 (.139)</td>
</tr>
<tr>
<td></td>
<td>1–2 million</td>
<td>11 (8.9)</td>
<td>2.98 ± 0.46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2–3 million</td>
<td>107 (87.0)</td>
<td>3.18 ± 0.54</td>
<td></td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td>Yes</td>
<td>74 (60.2)</td>
<td>3.18 ± 0.55</td>
<td>0.91 (.364)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>49 (39.8)</td>
<td>3.09 ± 0.53</td>
<td></td>
</tr>
<tr>
<td><strong>Type of family</strong></td>
<td>Nuclear family</td>
<td>113 (91.9)</td>
<td>3.14 ± 0.55</td>
<td>0.06 (.957)</td>
</tr>
<tr>
<td></td>
<td>Large family</td>
<td>10 (8.1)</td>
<td>3.13 ± 0.50</td>
<td></td>
</tr>
<tr>
<td><strong>Number of children</strong></td>
<td>1</td>
<td>31 (25.2)</td>
<td>3.11 ± 0.45</td>
<td>0.12 (.949)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>67 (54.5)</td>
<td>3.13 ± 0.55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>20 (16.3)</td>
<td>3.20 ± 0.69</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 4</td>
<td>5 (4.1)</td>
<td>3.18 ± 0.40</td>
<td></td>
</tr>
<tr>
<td><strong>Husband’s parental attitude</strong></td>
<td>Passive</td>
<td>15 (12.2)</td>
<td>2.75 ± 0.55</td>
<td>5.50 (.005)</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>59 (48.0)</td>
<td>3.15 ± 0.47</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Active</td>
<td>49 (39.8)</td>
<td>3.26 ± 0.57</td>
<td></td>
</tr>
</tbody>
</table>

KRW: Korean won (1 million KRW is approximately 900 US dollars).  
†Scheffé test.

Table 2. Levels of quality of life, health-promoting behaviors, marital intimacy, and parenting stress (N=123)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Mean ± SD</th>
<th>Reported range</th>
<th>Possible score range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quality of life</strong></td>
<td></td>
<td>3.14 ± 0.54</td>
<td>1.58–4.42</td>
<td>1–5</td>
</tr>
<tr>
<td>Physical health</td>
<td></td>
<td>13.01 ± 2.41</td>
<td>6–18</td>
<td>4–20</td>
</tr>
<tr>
<td>Psychosocial health</td>
<td></td>
<td>12.44 ± 2.63</td>
<td>4–18</td>
<td>4–20</td>
</tr>
<tr>
<td>Social relationships</td>
<td></td>
<td>12.30 ± 2.95</td>
<td>6–18</td>
<td>4–20</td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
<td>12.24 ± 2.58</td>
<td>6–19</td>
<td>4–20</td>
</tr>
<tr>
<td><strong>Health-promoting behaviors</strong></td>
<td></td>
<td>120.56 ± 19.69</td>
<td>74–175</td>
<td>52–208</td>
</tr>
<tr>
<td>Physical activity</td>
<td></td>
<td>14.13 ± 4.79</td>
<td>8–30</td>
<td>8–32</td>
</tr>
<tr>
<td>Nutrition</td>
<td></td>
<td>22.32 ± 4.29</td>
<td>12–36</td>
<td>9–36</td>
</tr>
<tr>
<td>Spiritual growth</td>
<td></td>
<td>22.48 ± 4.91</td>
<td>11–33</td>
<td>9–36</td>
</tr>
<tr>
<td>Interpersonal relations</td>
<td></td>
<td>24.54 ± 3.99</td>
<td>16–36</td>
<td>9–36</td>
</tr>
<tr>
<td>Stress management</td>
<td></td>
<td>17.87 ± 4.10</td>
<td>9–32</td>
<td>8–32</td>
</tr>
<tr>
<td><strong>Marital intimacy</strong></td>
<td></td>
<td>50.38 ± 9.26</td>
<td>23–71</td>
<td>15–75</td>
</tr>
<tr>
<td>Cognitive</td>
<td></td>
<td>17.27 ± 3.56</td>
<td>5–25</td>
<td>5–25</td>
</tr>
<tr>
<td>Emotional</td>
<td></td>
<td>16.59 ± 3.07</td>
<td>8–23</td>
<td>5–25</td>
</tr>
<tr>
<td>Sexual</td>
<td></td>
<td>16.52 ± 4.15</td>
<td>5–25</td>
<td>5–25</td>
</tr>
<tr>
<td><strong>Parenting stress</strong></td>
<td></td>
<td>77.17 ± 16.65</td>
<td>45–150</td>
<td>36–180</td>
</tr>
<tr>
<td>Parental distress</td>
<td></td>
<td>32.85 ± 7.79</td>
<td>13–57</td>
<td>12–60</td>
</tr>
<tr>
<td>Parent-child dysfunctional interaction</td>
<td></td>
<td>18.68 ± 6.40</td>
<td>12–51</td>
<td>12–60</td>
</tr>
<tr>
<td>Difficult child</td>
<td></td>
<td>25.63 ± 6.26</td>
<td>14–47</td>
<td>12–60</td>
</tr>
</tbody>
</table>
en with young children was thus 49.0% in the hierarchical regression model (F = 15.64, p < .001), with three explanatory variables: occupation (unemployed), HPB, and marital intimacy (Table 4).

**Discussion**

The level of QoL in this study was difficult to directly compare to prior studies, as few used the same instrument in vulnerable participants with similar demographic characteristics. In this study, the QoL subdomain scores of low-income women with preschool children were 12 to 13 points out of a possible range of 4 to 20, with the lowest scores for environmental, social relationships, and psychological health domain. It is lower than the QoL reported for low-income women in China using the 36-item Short Form survey, which identified 60 to 70 points out of 100 for QoL subdomains [19]. As low-income participants may be vulnerable in terms of psychological and social relationships, with multiple issues consequently arising, this underscores the need for closer attention to and provision of support concerning the relationship and psychological needs of low-income women, especially when rearing young children.

The greatest influencing factor on QoL was marital intimacy in this study. This is consistent with a previous study that marital intimacy was an important influencing factor on the QoL of Korean women [27]. In addition, poor marital of low-income Chinese mothers caring for young children has been reported as a negative effect on mothers’ QoL, which had a negative effect on their children’s QoL and behavior [29]. Another study in Korea [30] reported that low-income couples with high economic pressure experience greater marital conflict than couples with general income levels. Therefore, to improve the QoL of low-income women with young children, effective marital intimacy promotion programs, such as relationship improvement education and counseling programs, should not be overlooked for family health.

In this study, HPB was also identified as an important factor influencing QoL. This finding supports a previous study’s report that women with better HPB demonstrated better QoL [12]. Low-income women have less access to fresh and healthy foods and they consume a lot of soft drinks (soda/cola), fructose-containing drinks, and fast food [31]. In addition, access to exercise facilities is poor, and there are few opportunities to use exercise equipment or gymnasiums, leading to low physical activity and overall low level of HPB [32]. These unhealthy HPB affect not only low-income women but also the health of their children and

<p>| Table 3. Relationships among quality of life, HPB, marital intimacy, and parenting stress (N=123) |
|---|---|---|---|</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Quality of life</th>
<th>HPB</th>
<th>Marital intimacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of life</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPB</td>
<td>.57 (&lt;.001)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Marital intimacy</td>
<td>.56 (&lt;.001)</td>
<td>.40 (&lt;.001)</td>
<td>1</td>
</tr>
<tr>
<td>Parenting stress</td>
<td>–.23 (.010)</td>
<td>–.25 (.005)</td>
<td>–.33 (&lt;.001)</td>
</tr>
</tbody>
</table>

**Table 4. Factors influencing quality of life (N=123)**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>t (p)</td>
<td>β</td>
<td>t (p)</td>
</tr>
<tr>
<td>Education†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College or less</td>
<td>.21</td>
<td>1.40 (.164)</td>
<td>.09</td>
<td>.70 (.484)</td>
</tr>
<tr>
<td>≥ University</td>
<td>.37</td>
<td>2.52 (.013)</td>
<td>.16</td>
<td>1.24 (.219)</td>
</tr>
<tr>
<td>Occupation†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>.37</td>
<td>2.73 (.007)</td>
<td>.27</td>
<td>2.26 (.026)</td>
</tr>
<tr>
<td>Active</td>
<td>.38</td>
<td>2.80 (.006)</td>
<td>.28</td>
<td>2.37 (.019)</td>
</tr>
<tr>
<td>Health-promoting behaviors</td>
<td>.49</td>
<td>6.56 (&lt;.001)</td>
<td>.35</td>
<td>4.72 (&lt;.001)</td>
</tr>
<tr>
<td>Marital intimacy</td>
<td>.38</td>
<td>5.08 (&lt;.001)</td>
<td>.38</td>
<td>4.88 (&lt;.001)</td>
</tr>
<tr>
<td>Parenting stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.20</td>
<td></td>
<td>.42</td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.17</td>
<td></td>
<td>.39</td>
<td></td>
</tr>
<tr>
<td>F (p)</td>
<td>5.84 (&lt;.001)</td>
<td>13.77 (&lt;.001)</td>
<td>18.02 (&lt;.001)</td>
<td>15.64 (&lt;.001)</td>
</tr>
<tr>
<td>ΔAdjusted R²</td>
<td>.22</td>
<td></td>
<td>.10</td>
<td></td>
</tr>
</tbody>
</table>

†The reference variables were education (≤high school), occupation (employed), and husband’s parental attitude (passive).
families [16]. Thus, nurses can offer educational support for low-income women to adopt healthy behaviors in terms of food intake and physical activity. HPB interventions such as lifestyle modification program should be planned and delivered to improve the health of low-income women with young children.

In this study, parenting stress had a weak negative correlation with QoL but was not a significant factor affecting QoL. Most participants in this study were younger than 40 years of age, 52.8% were unemployed, and 87.8% of their spouses favorably supported participation in parenting, which may explain the relatively low score level. This is similar to a previous study of low-income women in the US that showed young age, public support, and spousal support having a positive relationship with QoL [16]. More studies are needed to further determine the seemingly negative relationship with economic activity and women’s QoL. Given that data collection occurred during the COVID-19 pandemic when caring for young children at home may have affected perceptions of parenting stress compounded by general concerns, large-scale research that considers various stages of child growth and development and types of economic stress is required.

The QoL of the women in this study showed significant differences according to their education level and their spouses’ parenting participation. In particular, findings were consistent with prior studies that showed that women with more formal education reported higher QoL and that the QoL of working women was higher [6,7]. A higher QoL may be linked to education level, women’s social activities in terms of their occupation. Among married Korean women, higher QoL has been found when easy marital communication occurs and when women are highly educated and have greater socioeconomic status [33]. For employed women raising young children, the lower the child support cost, the lower levels of QoL were found [34]. These results indicate that women’s economic activities and levels of support affect their QoL. As found in this study, the spouse’s active attitude to participate in parenting can help women try to balance the economic status related to parenting and work and family. Also, efforts such as education and reemployment training, public health services, and couple counseling activities should be made to improve the QoL of low-income women with young children.

This study has a limitation that only parenting stress was examined as a specific psychological factor and other factors such as individual depression and anxiety were not measured. Convenience sampling from one region in Korea may also limit its generalizability. However, this study is the first to our knowledge, to assess physical, psychological, and relational factors that influence QoL in low-income Korean women rearing preschool-aged children. As such, it provides empirical data on and can inspire interest in the lives of low-income women. By identifying the effects of general characteristics, HPB, marital intimacy, and parenting stress on the QoL of low-income women, better targeted practical intervention strategies can be developed in the nursing field and in government policies to foster healthier lifestyles among low-income women. Understanding issues affecting the QoL of life of low-income women with young children and implementing appropriate intervention strategies may have a positive effect on family planning related to childbirth in an era of low fertility. Encouraging healthier lifestyles among low-income women raising children can be expected to have a positive effect on all family members. In this regard, further studies that focus on program development to improve the QoL of low-income women and verify its effectiveness are recommended.

In conclusion, the QoL of low-income Korean women with young children was found to be mid-level, and marital intimacy, HPB, and employment status explained 49% of the variance. Based on the results of this study, it is recommended that efforts be made to enhance marital intimacy and effective HPB while considering their employment status. In addition, strategies through community self-reliance centers, reemployment education, and reinforcing basic health care are necessary. Nurses can participate in promoting healthy lifestyles, marital intimacy, and expanding career opportunities through a multidisciplinary approach to support women from low-income families caring for young children.

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**Authors’ contributions**

Conceptualization: Kim YM, Nho JH; Formal analysis: Kim YM; Writing—original draft: Kim YM, Nho JH; Writing—review & editing Kim YM, Nho JH.

**Conflict of interest**

Ju-Hee Nho has been Associate editor of *Korean Journal of Women Health Nursing* since 2021. She was not involved in the review process of this manuscript. Otherwise, there is no conflict of interest to declare.

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Data availability
Please contact the corresponding author for data availability.

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References
Korean healthcare providers' attitude, knowledge, and behaviors regarding sexual orientation and gender identity: a cross-sectional survey

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²The Research Institute of Nursing Science, Seoul National University, Seoul, Korea

Purpose: This study investigated Korean healthcare providers’ attitudes toward sexual and gender minority (SGM) persons and their knowledge and behavior concerning the collection of data on sexual orientation and gender identity (SO/GI).

Methods: In this cross-sectional, descriptive study, 137 Korean healthcare providers were recruited through convenience sampling from internet communities for medical professionals. A structured questionnaire was created using Google Surveys. The Mann-Whitney U-test, Kruskal-Wallis test, and Spearman correlation analysis were performed.

Results: The sample was mostly women (80.3%) and nurses (83.9%), who had overall negative attitudes toward SGM persons and low levels of knowledge and behavior with regard to the collection of patients’ SO/GI data. Participants in their 20s, who were religious, and had clinical experiences in treating or providing nursing care for SGM persons had higher levels of knowledge about the collection of SO/GI data. The level of engagement in collecting SO/GI data was higher among women and in their 20s and 30s, unreligious participants, nurses, and those with less than 10 years of clinical experience. Positive attitudes toward SGM persons were associated with higher levels of knowledge, but lower levels of behavior, regarding the collection of SO/GI data.

Conclusion: It is important to recognize the diversity of patients’ SO/GI and to collect the corresponding information. To this end, it is necessary to develop and use a standardized SO/GI form. Healthcare providers should also receive education and training related to the health of SGM persons to resolve health problems that disproportionately affect SGM persons and related health disparities.

Keywords: Attitude; Gender identity; Sexual and gender minorities

Introduction

The term “sexual and gender minority (SGM) persons” refers to people whose sexual orientation (SO) and gender identity (GI) are different from the socially predominant categories of heterosexual and cisgender; and encompasses lesbian (gay), bisexual, transgender, questioning (or queer), and intersex, as well as non-binary and other categories [¹]. It is estimated that 2.7% of the world’s adult population and 5.6% of the United States adult population are SGM persons [²], but there is no official estimate of the SGM population in South Korea (hereafter Korea) due to the lack of a national statistical survey inclusive of SGM identities. However, we can infer from the increase of participants in the Seoul Queer Culture Festival, that the number of people who
identify as SGM persons is growing in Korea. This annual festival for SGM Korean had 70 participants in its first year in 2000, which swelled to 70,000 in 2019 [3].

A minority group can be defined based on “the presence or absence of prejudice and discrimination” directed toward physical and cultural characteristics, rather than sheer numerical size [4]. Demonstrating a stable heterosexual GI through marriage to a person of the opposite gender is rewarded with social status and acceptance, whereas patterns of human sexuality other than heterosexuality are considered “exceptional” and can be perceived as a problem that is the target of controversy and hatred [5]. As a result, SGM persons face stressful experiences as a result of concealing their GI to varying extents and often suffer from discrimination and harassment [6]. Furthermore, they are more vulnerable to psychological problems such as depression, anxiety, and suicide attempts, and have higher rates of alcohol and drug abuse [7], which lead to an increased risk of cardiovascular disease [8]. In particular, SGM Koreans were reported to have an economic burden for hormone therapy or sex reassignment surgery which were not reimbursed by Korea’s national health insurance system. In addition, negative perceptions toward SGM persons among Korean healthcare providers and their lack of experience in treating SGM persons have been reported as barriers that limit access to medical services among SGM individuals [9].

Information on SO/GI is useful for healthcare providers to identify health problems specific to SGM persons; and therefore, it is beneficial to collect data on SO/GI in the clinical context [1]. For example, a previous study of the United States found that lesbian women were more likely to abuse alcohol, be obese, or have a stroke (prevalence ratio [PR], 1.2–1.96) than heterosexual women; and gay men had a higher risk of hypertension and heart disease than heterosexual men (PR, 1.2–1.3) [10]. In addition, the risk of binge eating was 12.5 times higher in gay and bisexual boys and three times higher in lesbian and bisexual girls than in their heterosexual counterparts in the United Kingdom [11]. Furthermore, human immunodeficiency virus infection, genital warts, and contact dermatitis were prevalent in gay and bisexual men [12]. Thus, SO and GI seem to be associated with disproportionate vulnerability to and risks for various health problems.

Nevertheless, many social environments such as hatred and discrimination are not favorable to SGM persons [5,13], often leading to fear and anxiety regarding self-disclosure. Moreover, since SO/GI information is not generally mandated in medical contexts, SGM persons have difficulty discussing their health problems and often feel that they do not receive appropriate treatment [14]. According to a systematic literature review [15], interactions between healthcare providers and patients were the most important factor in the disclosure of SO/GI among SGM persons when they received medical services. Specifically, SGM persons felt more comfortable disclosing their SO/GI to communicative, open, and receptive medical staff, whereas they were reluctant to reveal SO/GI information when healthcare providers were heteronormative, deeply religious, or demonstrated prejudiced attitudes.

In recent years, the medical system has changed to emphasize patient-centered healthcare to promote patient satisfaction and well-being, and the importance of communication between patients and healthcare providers is more widely recognized. Healthcare providers’ cultural competence has also been emphasized to offer safe and quality medical services to patients with diverse cultural backgrounds [16]. However, despite the increasing number of SGM-identified persons in Korea and the need to
assess and manage their health, there are still insufficient data on their health status [17] as well as interactions with healthcare providers. Therefore, this study aimed to investigate Korean healthcare providers’ attitudes toward SGM persons and their levels of knowledge and behavior concerning the collection of SO/GI data, with the ultimate goal of alleviating health disparities faced by SGM Koreans and promoting holistic, patient-centered medical services.

Methods

**Ethics statement:** This study was approved by the Institutional Review Board of Seoul National University (2007/003-006). Informed consent was obtained from the participants.

**Study design**

This cross-sectional survey employed a descriptive correlational design. This study was described in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines (https://www.strobe-statement.org).

**Participants**

The inclusion criteria were licensed healthcare providers (physicians, dentists, Korean medicine doctors, midwives, and nurses) practicing at medical institutions (public health centers, clinics, primary hospitals, general hospitals, and tertiary general hospitals) in Korea, who understood the purpose of the study and voluntarily agreed to participate. The exclusion criteria were healthcare providers who did not have face-to-face contact with patients due to their specialty or those who were not involved in evaluations of patients’ current conditions and medical history. The appropriate number of participants was estimated to be at least 120, using the G*Power 3.10 program with a median effect size of .25, a significance level of .05, and a power (1-β) of .80 [18]. Of the 139 respondents who voluntarily completed the online survey, two did not meet the selection criteria and were excluded. Thus, a total of 137 healthcare providers were included in the analysis, which was a suitable sample size for the independent sample t-test.

**Measurement tools**

*Healthcare providers’ attitudes toward sexual and gender minority persons*

The attitudes of healthcare providers toward SGM persons were assessed using the revised scale of Prejudice Against Sexual and Gender Diversity which was developed and modified by Costa et al. [19]. After obtaining permission from the developers, to ensure cultural sensitivity in utilizing the instrument in Korean, translation and back-translation processes were performed according to recommendations in the literature [20]. The tool consists of 18 items: nine for the factor of prejudice toward sexual diversity and nine for the factor of prejudice toward gender diversity. Rated on a 5-point Likert (strongly disagree, 1 to strongly agree, 5). To facilitate convenient interpretation of the study results, reverse coding was performed. That is, a higher point indicates a more positive attitudes toward SGM persons. In the study of Costa et al. [19], the validity of the tool was verified through confirmatory factor analysis, and the reliability was good (Cronbach’s α of .93). In this study, Cronbach’s α was .90, the item-level content validity index (ICVI) was .94 and the scale-level content validity index/averaging (S-CVI/Ave) was .98.

*Knowledge concerning the collection of data on sexual orientation and gender identity*

Among the tools that Rose [21] developed to evaluate culturally competent communication in hospital registration staff, we used the SO/GI Knowledge Scale after obtaining permission to translate from the original author. The tool consists of eight items on understanding the purpose of SO/GI data collection, patient safety issues, the meaning of terms, the importance of patients’ SO/GI, and the value of SO/GI information. Each item is rated on a 5-point Likert scale (strongly disagree, 1 to strongly agree, 5). A higher point indicates a higher level of knowledge about the documentation of patients’ SO/GI. To verify content validity of the tool before translating and using it, two nursing professors and two nursing doctoral students were asked to assess whether the content of each question was valid using a 4-point Likert scale: “not appropriate at all (1 point),” “not suitable and needs correction (2 points),” “suitable but needs a little modification (3 points),” and “very appropriate (4 points).” The ICVI was 1.0 and the S-CVI/Ave was 1.0. The reliability of the original tool, as shown by Cronbach’s α, was .95, and Cronbach’s α was .87 in the current study.

*Behavior concerning the collection of data on sexual orientation and gender identity*

Healthcare providers’ level of behavior in SO/GI data collection was assessed using the Recommended Behavior Scale, also developed by Rose [21]. The four-item tool consists of how often SO/GI data are collected, whether a SO/GI collection form is used, whether the data are entered into the electronic system,
and whether the patient’s gender is entered based on guesswork. Each item is scored using a 5-point Likert scale (never, 1 to always, 5) and a higher point indicates greater data collection behavior. Cronbach’s α in Rose’s study [21] was .86 and .78 for this study. The I-CVI was .92 and the S-CVI/Ave was .94 in the current study. In addition, an open-ended question was asked to elicit reasons for not collecting patients’ SO/GI so that the respondents could freely elaborate.

**General characteristics**
The following eight items were investigated as general characteristics of participants: gender, age, religion, occupation, clinical career, clinical area, clinical experience in treating or providing nursing care for SGM persons, and educational experience on SGM persons.

**Data collection**
The data were collected from July 17 to August 31, 2020, and participants were recruited through convenience sampling by posting study flyers on social networking services for healthcare providers, e.g., Band (Naver, Seongnam, Korea), and Facebook (Meta Platforms, Menlo Park, CA, USA). Those who were willing to participate in the study were allowed to access the Google Surveys (Google LLC., Mountain View, CA, USA). A gift certificate was presented as a token of appreciation for participating in the study, and if the participant’s phone number was left at the end of the questionnaire, the gift certificate was sent to the mobile phone.

**Data analysis**
The collected data were analyzed using IBM SPSS ver. 25.0 (IBM Corp., Armonk, NY, USA). The general characteristics were analyzed using descriptive statistics such as frequency, percentage, and mean. The Mann-Whitney U-test and Kruskal-Wallis test were used after normality testing to investigate differences in attitudes toward SGM persons, knowledge about collection of patients’ SO/GI information, and the level of engagement in SO/GI data collection behavior according to healthcare providers’ general characteristics. The Bonferroni correction method was used as a post-hoc test. Spearman correlation coefficients were used to analyze relationships between the healthcare providers’ attitudes toward SGM persons, their knowledge about the collection of patients’ SO/GI information, and their level of SO/GI data collection behavior. Responses to the open-ended question on reasons for not collecting patients’ SO/GI were grouped into common themes for frequency analysis.

**Results**

**General characteristics of the participants**
Of the 137 healthcare providers, only nurses and physicians participated, of which the majority were nurses (n = 115, 83.9%) and women (n = 110, 80.3%). The mean age was 33.23 (± 5.55) years (range, 22–59 years); 82 participants (59.8%) were 30 to 39 years of age. Thirty-six participants (26.3%) reported having a religion. Participants’ clinical careers ranged from 1 year to 30 years (mean of 5.9 years), with 78 (56.9%) having less than 5 years of experience. The majority of the respondents had not experienced treating or providing nursing care for SGM persons (n = 104, 75.9%) and had not received education on SGM (n = 123, 89.8%) (Table 1). Participants’ clinical area was asked using a narrative response, with the most special units of intensive care unit, emergency room, and kidney dialysis (n = 47, 34.3%), followed by internal medicine (n = 21, 15.3%), surgery (n = 15, 11.0%), pediatrics (n = 9, 6.6%), obstetrics and gynecology (n = 8, 5.8%), and rehabilitation medicine (n = 6, 4.4%). In the case of the in-patient ward (n = 21, 15.3%), the exact parts were not filled in. Others (n = 10, 7.3%) were neurology, otolaryngology, psychiatry, and dermatology.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Categories</th>
<th>n (%) or mean ± SD (range)</th>
</tr>
</thead>
<tbody>
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<td>Gender</td>
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<td>110 (80.3)</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>27 (19.7)</td>
</tr>
<tr>
<td>Age (year)</td>
<td></td>
<td>33.23 ± 5.55 (22–59)</td>
</tr>
<tr>
<td></td>
<td>20–29</td>
<td>42 (30.7)</td>
</tr>
<tr>
<td></td>
<td>30–39</td>
<td>82 (59.8)</td>
</tr>
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<td></td>
<td>≥ 40</td>
<td>13 (9.5)</td>
</tr>
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<td>Religion</td>
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</tr>
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<td></td>
<td>Yes</td>
<td>36 (26.3)</td>
</tr>
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<td>Occupation</td>
<td>Nurse</td>
<td>115 (83.9)</td>
</tr>
<tr>
<td></td>
<td>Doctor</td>
<td>22 (16.1)</td>
</tr>
<tr>
<td>Clinical career (year)</td>
<td></td>
<td>5.89 ± 4.92 (1–30)</td>
</tr>
<tr>
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<td>&lt; 5</td>
<td>78 (56.9)</td>
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<td>32 (23.4)</td>
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<td>10–14</td>
<td>18 (13.1)</td>
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<td>≥ 15</td>
<td>9 (6.6)</td>
</tr>
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<td>Clinical experience in treating or providing nursing care for SGM persons</td>
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<td>104 (75.9)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>33 (24.1)</td>
</tr>
<tr>
<td>Educational experience on SGM persons</td>
<td>No</td>
<td>123 (89.8)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>14 (10.2)</td>
</tr>
</tbody>
</table>

SGM: Sexual and gender minority.
Differences in attitudes, knowledge, and behavior according to healthcare providers’ general characteristics

The median score for attitudes toward SGM persons was greater than mid-level at 60 (range, 24–84), and the point-average (based on a 5-point scale) was 3.29 ± 0.69 points. There were no significant differences according to the healthcare providers’ general characteristics (Table 2).

The level of knowledge about collection of SO/GI information was greater than mid-level at 29 points (range, 16–40), and the point-average score was 3.50 ± 0.74 on a 5-point scale. Knowledge was higher among healthcare providers in their 20s (p < .001), those who were religious (p = .003), and those who had clinical experience in treating or providing nursing care for SGM persons (p < .001) relative to their counterparts (Table 2).

The level of behavior in collecting SO/GI information was lower than mid-level at 8 points (range, 4–17), and the point-average score (based on a 5-point scale) was 2.67 ± 0.56 points. Greater behaviors were found in women than in men (p < .001), among respondents in their 20s and 30s than among those in their 40s (p < .001), in unreligious than in religious respondents (<.001), among nurses than among physicians (p = .003), and in respondents with less than 10 years of clinical experience than in those with more than 10 years (p = .002) (Table 2).

Correlations among key variables

Healthcare providers’ attitudes toward SGM persons were positively weakly correlated with their knowledge about SO/GI information collection (r = .20, p = .018), but negatively weakly correlated with their engagement in information collection behavior (r = –.24, p = .005). In other words, healthcare providers with more positive attitudes toward SGM persons had higher levels of knowledge about the collection of SO/GI information, but those with more negative attitudes adhered more strictly to the collection of SO/GI information. No statistically significant correlation was found between knowledge and behavior related to the collection of SO/GI information (Table 3).

Reasons for not collecting SO/GI information

Twenty-three participants described their reasons for not collecting SO/GI information. The most common reason was that they

<table>
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<tr>
<th>Variable</th>
<th>Categories</th>
<th>n</th>
<th>Median (range)</th>
<th>p</th>
<th>Median (range)</th>
<th>p</th>
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<th>p</th>
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<td>Gender</td>
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<td>60.0 (24–84)</td>
<td>.797</td>
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<td>.894</td>
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<td>27</td>
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<td></td>
<td>6.0 (4–11)</td>
<td></td>
</tr>
<tr>
<td>Age (year)</td>
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<td>42</td>
<td>58.0 (24–81)</td>
<td>.401</td>
<td>32.0 (21–40)</td>
<td>&lt;.001</td>
<td>6.0 (4–17)</td>
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<td>82</td>
<td>60.0 (42–84)</td>
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<td>25.0 (16–38)</td>
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<td>9.0 (4–15)</td>
<td>(a, b, c)</td>
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<td>≥ 40</td>
<td>13</td>
<td>56.0 (41–78)</td>
<td></td>
<td>26.0 (19–32)</td>
<td></td>
<td>5.0 (4–7)</td>
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<td>.003</td>
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<td>6.0 (4–15)</td>
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<td>.399</td>
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<td>.003</td>
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<td>22</td>
<td>57.0 (41–80)</td>
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<td></td>
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<td>Clinical career (year)</td>
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<td>(a, b, c, d)</td>
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<td>10–14</td>
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<td>56.0 (41–78)</td>
<td></td>
<td>27.0 (19–35)</td>
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<td>5.5 (4–11)</td>
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<td>5.0 (4–7)</td>
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<tr>
<td>Clinical experience in treating or providing nursing care for SGM persons</td>
<td>No</td>
<td>104</td>
<td>60.0 (24–83)</td>
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<td>8.0 (4–17)</td>
<td>.095</td>
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<td>7.0 (4–15)</td>
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<tr>
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<td>123</td>
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<td>.051</td>
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<td>.190</td>
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<td>14</td>
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<td>31.0 (23–38)</td>
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<td>7.0 (4–13)</td>
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<tr>
<td>Total</td>
<td>Possible range</td>
<td></td>
<td>60.0 (24–84)</td>
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<td>29.0 (16–40)</td>
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<td>8.0 (4–17)</td>
<td></td>
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<td></td>
<td>Point-average, mean ± SD</td>
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<td>3.29 ± 0.69</td>
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<td>3.50 ± 0.74</td>
<td></td>
<td>2.67 ± 0.56</td>
<td></td>
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</tbody>
</table>

GI: Gender identity; SGM: sexual and gender minority; SO: sexual orientation. p-value by *Kruskal-Wallis test and †Mann-Whitney U-test.
Attitudes toward SGM persons

Knowledge of the collection SO/GI

Behavior of the collection SO/GI

GI: Gender identity; SGM: sexual and gender minority; SO: sexual orientation.

did not feel the need for SO/GI information during treatment or nursing. In other words, SO/GI information was perceived as unnecessary for treatment or irrelevant to patients’ medical conditions. Other reasons included feeling uncomfortable inquiring about SO/GI or not wanting patients to feel uncomfortable about disclosing their SO/GI (n = 4), and feeling “it was none of their business,” i.e., that SO/GI is a matter of personal privacy and personal information (n = 4). One respondent stated that there was no section designated to fill in SO/GI information in the patient intake form (Table 4).

Discussion

This study is the first to our knowledge to assess Korean healthcare providers’ perceptions of SGM persons and collection of SO/GI information.

Negative attitudes and perceptions toward SGM persons in Korea have been reported in the Organisation for Economic Co-operation and Development (OECD) Social Indicators [22]. Compared to the OECD average score of 5.96, Korea scored 2.81 for acceptance of SGM persons, the fifth-lowest among the 36 member countries. Similar negative perceptions of SGM persons were also noted among the healthcare providers enrolled in this study. Specifically, the point-average attitude score was 3.29, the attitudes of our participants toward SGM persons were slightly more negative than the attitudes of reported in Brazilian high school teachers, students, and employees [23]. Although this study was limited by the small number of participants recruited through convenience sampling, the findings nonetheless indicate that perceptions of SGM persons in Korean nurses and physicians were as negative as those of the general public.

Due to the limited number of international studies on healthcare providers’ level of basic knowledge on identifying their patients’ SO/GI, it was difficult to make conclusive comparisons, but the level of knowledge in our study (point-average of 3.50 ± 0.74) was lower than that reported (point-average of 4.40 ± 0.61) by Rose [21] who developed the assessment tool and used in the United States. Thus, the participants of our study did not seem to have sufficient knowledge about why it is necessary to identify patients’ SO/GI, how valuable the data are, and which associated patient-related safety issues exist. The World Health Organization (WHO) and the Association of American Medical Colleges recommend that universities and medical institutions provide education on SGM persons, and the United States, Canada, United Kingdom, and Japan have promoted the expansion of the curriculum dealing with the health of SGM persons [24]. In Korea, however, a class on SGM persons was offered for the first time in 2021 at one medical school, but it was an extra-curricular elective course open to only a few students. In the field of nursing, education about SGM persons is also lacking, indeed, a recent study showed that 91.6% of Korean nurses had never received SGM-related education [25]. Considering that the issue of SGM persons has not been covered in the medicine and nursing curricula in Korea, it is unsurprising that healthcare providers had a very low level of knowledge about the collection of patients’ SO/GI data.

However, as demonstrated in this study, healthcare providers with experience in treating or providing care for SGM persons had higher levels of knowledge about SO/GI data collection, and their knowledge level was positively correlated with their attitudes toward SGM persons, indicating that education and experience can be associated factors. According to a systematic literature review by Morris et al. [26], educating medical students and healthcare providers about SGM persons contributed to improved knowledge about SGM health issues and decreased prejudice against them. Since knowledge acquired through education can likewise reduce prejudice, fear, and providing non-evidence-based medical services—all

Table 4. Reasons for not collecting sexual orientation and gender identity information (n=23)
that recent social changes have influenced the perceptions of the healthcare providers. In the past, SGM persons were considered “abnormal,” but awareness of issues related to SGM persons’ human rights has been raised in the arts and cultural sectors [31]. Religious healthcare providers had higher levels of knowledge about the documentation of SO/GI data, but their behavior levels were low. However, since there are no data to compare with the results of the current study, future research needs to focus on identifying changes in medical practitioners’ religious perceptions and behavioral patterns toward SGM persons.

Furthermore, in our study, nurses accounted for the majority of study participants and they more often collected SO/GI data as compared to physician participants. This might suggest that nurses have more interest in SGM persons and more enthusiasm for voicing their opinions, which led to their higher study participation. Accordingly, future studies including a wider spectrum of healthcare providers are necessary, as well as studies on their needs regarding approaches and solutions to SGM persons’ health issues.

Healthy People 2030 [32], a national public health and health promotion plan published every decade by the U.S. Department of Health and Human Services, includes population data aimed at improving the health, safety, and well-being of SGM persons. It focuses on the collection of data on health issues of SGM persons and improvement of the health of SGM youth. In Korea, Health Plan 2030 [33], a comprehensive national health promotion plan, suggests mid- to long-term policy directions for disease prevention and health promotion and a vision to secure health equity by referring to the announcements of the WHO and the U.S. Healthy People 2030 [32]. However, it currently includes only acquired immune deficiency syndrome screening and treatment as a measure relevant to infectious diseases prevention among SGM persons. Therefore, changes should be made to health promotion policies in Korea to bring them in line with international trends, which include the collection of health data on SGM persons to resolve healthcare disparities.

As this study was based on a small sample of relatively young participants who were mostly nurses, the results may not be generalizable to all healthcare providers. In addition, the choice of instruments with good psychometric properties to evaluate SO/GI were limited. Despite these limitations, as the first effort in Korea to our knowledge, to identify healthcare providers’ attitudes toward SGM persons and knowledge and behavior concerning the collection of SO/GI information, it offers significant information to explore ways to resolve health inequality and suggest future directions in healthcare.

In conclusion, based on the results of this study, we would like to make the following suggestions. Healthcare providers should...
be aware that their patients can have various SO/GI and make efforts to address their unique health problems. To this end, it is necessary for nursing schools and medical institutions in Korea to include education and training related to the health of SGM persons in their regular curricula. Second, further research needs to be conducted to develop a tool with verified validity for the evaluation of healthcare providers’ collection of SO/GI information. It is also necessary to devise and utilize a standardized script or form that can be used to collect patients’ SO/GI information.

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Authors’ contributions

Conceptualization: An YH, Chung CW; Data analysis: An YH; Formal analysis: Chung CW; Writing–original draft of the article: An YH; Writing–review & editing: Chung CW.

Conflict of interest

ChaeWeon Chung has been editor of Korean Journal of Women Health Nursing since 2020. She was not involved in the review of this article and has no other conflicts of interest to declare.

Funding

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Data availability

Please contact the corresponding author for data availability.

Acknowledgments

None.

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13. Truman JL, Morgan RE, Gilbert T, Vaghele P. Measuring sexual orientation and gender identity in the national crime vic-


Corrigendum: Factors influencing prenatal and postpartum depression in Korea: a prospective cohort study

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This corrigendum is for correcting some errors in Tables 3 and 4. Number of subjects for variables and indicator variables was not correctly reported. A corrected Tables 3 and 4 are attached below. The authors apologize for any inconvenience that this may have caused.

Table 3. Factors influencing women's prenatal depression during pregnancy (N=219)

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<th>20 weeks</th>
<th>28 weeks</th>
<th>36 weeks</th>
</tr>
</thead>
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<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
</tr>
<tr>
<td><strong>Prenatal factor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status†</td>
<td>4.89</td>
<td>.001</td>
<td>3.38</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>2.48</td>
<td>&lt;.001</td>
<td>2.69</td>
</tr>
<tr>
<td>Prenatal depression experience‡</td>
<td>2.48</td>
<td>.007</td>
<td>2.12</td>
</tr>
<tr>
<td>Prenatal anxiety experience‡</td>
<td>2.60</td>
<td>.014</td>
<td>3.02</td>
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<tr>
<td>Pregnancy intention</td>
<td>1.21</td>
<td>.164</td>
<td>1.34</td>
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<tr>
<td>Previous history of depression†</td>
<td>5.40</td>
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<tr>
<td>Social support</td>
<td>1.30</td>
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<tr>
<td>Marital satisfaction</td>
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<td>Life stress</td>
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<td>.005</td>
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<tr>
<td>Parity†</td>
<td>0.70</td>
<td>.295</td>
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<tr>
<td>Paternal depression† (n=181)‡</td>
<td>1.22</td>
<td>.737</td>
<td>0.86</td>
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</tbody>
</table>

OR: Odds ratio; CI: confidence interval.
†The indicator groups were as follows: socioeconomic status (low), prenatal depression (yes), prenatal anxiety (yes), previous history of depression (yes), parity (first-time mother), and paternal depression (depressive). ‡In this analysis, the maternal sample size was matched with the paternal sample size.
Table 4. Factors influencing women’s postpartum depression during the postpartum period (N=183)

<table>
<thead>
<tr>
<th>Variable</th>
<th>2 weeks</th>
<th></th>
<th>6 weeks</th>
<th></th>
<th>12 weeks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>p</td>
<td>95% CI</td>
<td>OR</td>
<td>p</td>
<td>95% CI</td>
</tr>
<tr>
<td>Prenatal factor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status †</td>
<td>2.54</td>
<td>.070</td>
<td>0.93–6.95</td>
<td>1.13</td>
<td>.846</td>
<td>0.34–3.73</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>1.53</td>
<td>.020</td>
<td>1.07–2.19</td>
<td>1.86</td>
<td>.003</td>
<td>1.23–2.80</td>
</tr>
<tr>
<td>Prenatal depression experience †</td>
<td>2.39</td>
<td>.008</td>
<td>1.26–4.55</td>
<td>2.06</td>
<td>.044</td>
<td>1.02–4.16</td>
</tr>
<tr>
<td>Prenatal anxiety experience †</td>
<td>3.13</td>
<td>.001</td>
<td>1.64–5.97</td>
<td>2.00</td>
<td>.046</td>
<td>1.01–3.96</td>
</tr>
<tr>
<td>Pregnancy intention</td>
<td>1.40</td>
<td>.019</td>
<td>1.06–1.86</td>
<td>1.14</td>
<td>.429</td>
<td>0.83–1.55</td>
</tr>
<tr>
<td>Previous history of depression †</td>
<td>1.67</td>
<td>.221</td>
<td>0.74–3.81</td>
<td>1.67</td>
<td>.257</td>
<td>0.69–4.03</td>
</tr>
<tr>
<td>Social support</td>
<td>1.29</td>
<td>&lt;.001</td>
<td>1.16–1.44</td>
<td>1.22</td>
<td>&lt;.001</td>
<td>1.10–1.34</td>
</tr>
<tr>
<td>Marital satisfaction</td>
<td>2.51</td>
<td>.002</td>
<td>1.42–4.47</td>
<td>3.14</td>
<td>&lt;.001</td>
<td>1.74–5.66</td>
</tr>
<tr>
<td>Life stress</td>
<td>2.30</td>
<td>.001</td>
<td>1.43–3.70</td>
<td>2.34</td>
<td>.001</td>
<td>1.43–3.84</td>
</tr>
<tr>
<td>Postpartum factor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child care stress</td>
<td>2.89</td>
<td>&lt;.001</td>
<td>1.87–4.46</td>
<td>2.66</td>
<td>&lt;.001</td>
<td>1.68–4.22</td>
</tr>
<tr>
<td>Infant temperament</td>
<td>1.95</td>
<td>&lt;.001</td>
<td>1.35–2.81</td>
<td>1.83</td>
<td>&lt;.001</td>
<td>1.34–2.51</td>
</tr>
<tr>
<td>Maternity blues †</td>
<td>7.82</td>
<td>&lt;.001</td>
<td>3.88–15.74</td>
<td>2.43</td>
<td>.013</td>
<td>1.21–4.87</td>
</tr>
<tr>
<td>Parity †</td>
<td>1.27</td>
<td>.495</td>
<td>0.64–2.48</td>
<td>1.60</td>
<td>.231</td>
<td>0.74–3.43</td>
</tr>
<tr>
<td>Paternal depression † (n = 130) †</td>
<td>1.62</td>
<td>.526</td>
<td>0.37–7.15</td>
<td>1.36</td>
<td>.663</td>
<td>0.34–5.36</td>
</tr>
</tbody>
</table>

OR: Odds ratio; CI: confidence interval.
† The indicator groups were as follows: socioeconomic status (low), prenatal depression (yes), prenatal anxiety (yes), previous history of depression (yes), maternity blues (yes), parity (first-time mother), and paternal depression (depressive). ‡ In this analysis, the maternal sample size was matched with the paternal sample size.
Instructions to Authors

Korean Journal of Women Health Nursing
Enacted in March 1995 and most recently revised in December 2021 and applied from Vol 28, No 1 (March 2022)

1. General Guidelines for Manuscript

The Korean Journal of Women Health Nursing is focused on women’s healthy life processes or on conditions relevant to women due to greater risk or prevalence among women. It features original articles and review papers. Manuscripts for submission should be prepared according to the following instructions. The Journal follows the Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication (http://www.icmje.org) if not otherwise described below.

1-1. QUALIFICATION FOR AUTHORS AND LANGUAGE

Nurses or researchers throughout the world can submit a manuscript if the scope is appropriate for Korean Journal of Women Health Nursing. Manuscripts should be submitted in English or in Korean. Medical or nursing terminology should be written based on the most recent edition of Dorland’s Illustrated Medical Dictionary, the most recent edition of English-Korean Korean-English Medical Terminology (https://term.kma.org/search/list.asp) published by the Korean Medical Association or the most recent edition of Standard Nursing Terminology published by the Korean Society of Nursing Science. Authors are required to state their affiliation and related status (job titles) upon submission, to support the reliability of the research.

1-2. RESEARCH AND PUBLICATION ETHICS

For the policies on research and publication ethics that are not stated in these instructions, the Good Publication Practice Guidelines for Medical Journals (https://www.kamje.or.kr/board/view?b_name=bo_publication&bo_id=13&per_page= ) or the Guidelines on Good Publication Practice (https://publicationethics.org/guidance/Guidelines) can be applied.

Conflict-of-interests statement: Authors are required to disclose commercial or similar relationships to products or companies mentioned in or related to the subject matter of the article being submitted. Sources of funding for the article should be acknowledged in a footnote on the title page. Affiliations of authors should include corporate appointments relating to or in connection with products or companies mentioned in the article, or otherwise bearing on the subject matter thereof. Other pertinent financial relationships, such as consultancies, stock ownership or other equity interests, or patent-licensing arrangements should be disclosed to the Editor-in-Chief in the cover letter at the time of submission. Such relationships may be disclosed in the Journal at the discretion of the Editor-in-Chief in footnotes appearing on the title page. Questions about this policy should be directed to the Editor-in-Chief. If there is no conflict of interest, this should also be explicitly stated as “The author(s) declared no conflicts of interest.”

Statement of human and animal rights: Clinical research should be done in accordance with the Ethical Principles for Medical Research Involving Human Subjects, outlined in the Declaration of Helsinki (https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/). Clinical studies that do not meet the Declaration of Helsinki will not be considered for publication. Research participants’ rights to privacy must be protected, and personal identifiable information should not be disclosed unless absolutely necessary. Human subjects should not be identifiable, i.e., patients’ names, initials, hospital numbers, dates of birth, photographs, or other protected healthcare information should not be disclosed. If such personal information is needed as scientific data for publication, this should be explained to participants (or legal guardians) and written consent must be obtained. The possibility of online information sharing (not only printed publications) must also be explained. For animal subjects, research should be performed based on the National or Institutional Guide for the Care and Use of Laboratory Animals, and the ethical treatment of all experimental animals should be maintained. For studies using literature review and meta-analysis, Institutional Review Board (IRB) approval is not required. For secondary data analysis studies, the editorial committee will decide whether IRB approval is needed.

Statement of informed consent: Copies of written informed consents and IRB approval for clinical research should be kept. If necessary, the editor or reviewers may request copies of these documents to resolve questions about IRB approval and study conduct.

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**Authorship:** All authors, including the co-authors, should be responsible for a significant part of the manuscript. All authors and co-authors should have taken part in writing the manuscript, reviewing it, and revising its intellectual and technical content. Any author whose name appears on a paper assumes responsibility and accountability for the results.

**Originality and duplicate publication:** All submitted manuscripts should be original and should not be considered by other scientific journals for publication at the same time. Manuscripts are accepted for publication with the understanding that their contents, or their essential substance, have not been published elsewhere, except in abstract form or by the express consent of the Editors. Any part of the accepted manuscript should not be duplicated in any other scientific journal without the permission of the Editorial Board. The duplication will be checked through Similarity-Check powered by iThenticate (https://www.crossref.org/services/similarity-check/) before review. If duplicate publication related to the papers of this journal is detected, the authors will be announced in the journal and their institutes will be informed, and there also will be penalties for the authors. Materials taken from other sources must be accompanied by written permissions for reproduction, obtained from the original publisher. Editors should follow the procedure set out in the Committee on Publication Ethics (COPE) flowcharts (https://publicationethics.org/resources/flowcharts-new/translations) that are designed to help editors follow COPE’s Code of Conduct and implement its advice when faced with cases of suspected misconduct.

**Secondary publication:** It is possible to republish manuscripts if the manuscripts satisfy the condition of secondary publication of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (http://www.icmje.org).

**Publication of master's thesis or doctoral dissertation:** When thesis or dissertation work is submitted for publication, the first author should be the thesis awardee and should declare that content is from thesis/dissertation.

**1-3. DATA SHARING**
This journal follows the data sharing policy described in “Data Sharing Statements for Clinical Trials: A Requirement of the International Committee of Medical Journal Editors (ICMJE)” (https://doi.org/10.3346/jkms.2017.32.7.1051). As of July 1, 2018 manuscripts submitted to ICMJE journals that report the results of interventional clinical trials must contain a data sharing statement as described below. Clinical trials that begin enrolling participants on or after January 1, 2019 must include a data sharing plan in the trial’s registration. The ICMJE’s policy regarding trial registration is explained at http://www.icmje.org/about-icmje/faqs/clinical-trials-registration/. If the data sharing plan changes after registration this should be reflected in the statement submitted and published with the manuscript, and updated in the registry record. All of the authors of research articles that deal with interventional clinical trials must submit data sharing plan of example 1 to 4 in Table 1. Based on the degree of sharing plan, authors should deposit their data after de-identification and report the digital object identifier (DOI) of the data and the registered site.

**1-4. PEER REVIEW PROCESS**
All contributions (including solicited articles) are critically reviewed by the editorial board members, and/or reviewers. If the manuscript does not fit the aims and scope of the Journal or does not adhere to the Instructions to Authors, it may be returned to the author immediately after receipt and without a review. Before reviewing, all submitted manuscripts are inspected by Similarity-Check powered by iThenticate (https://www.crossref.org/services/similarity-check/), a plagiarism-screening tool. Reviewers’ comments are usually returned to authors. The decision of the editor is final. Manuscripts are sent simultaneously to two reviewers for double blinded peer review. A third reviewer will be assigned if there is discrepancy. Authors will receive notification of the publication decision, along with copies of the reviews and instructions for revision, if appropriate, within two months after receipt of the submission.

Final revised manuscript: A final version of the accepted manuscript should be submitted on the web. If aspects of the research are reported elsewhere, include a copy of the publication(s). Include all main manuscript material in one file (with exception of title page). Save your file as MS Word. Failure to resubmit the revised manuscript within two weeks of the editorial decision is regarded as a withdrawal and will be treated as a new submission if submitted again later.

**Peer review process for handling submissions from editors, employees, or members of the editorial board:** All manuscripts from editors, employees, or members of the editorial board are processed same to other unsolicited manuscripts. During the review process, submitters will not engage in the selection of reviewers and decision process. Editors will not handle their own manuscripts if they are commissioned ones.

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Table 1. Examples of data sharing statements that fulfill the requirements of the International Committee of Medical Journal Editors.

<table>
<thead>
<tr>
<th>Element</th>
<th>Example 1</th>
<th>Example 2</th>
<th>Example 3</th>
<th>Example 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will individual participant data be available (including data dictionaries)?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What data in particular will be shared?</td>
<td>All individual participant data collected during the trial, after deidentification.</td>
<td>Individual participant data that underlie the results reported in this article, after deidentification (text, tables, figures, and appendices).</td>
<td>Individual participant data that underlie the results reported in this article, after deidentification (text, tables, figures, and appendices).</td>
<td>Not available</td>
</tr>
<tr>
<td>What other documents will be available?</td>
<td>Study protocol, statistical analysis plan, informed consent form, clinical study report, analytic code</td>
<td>Study protocol, statistical analysis plan, analytic code</td>
<td>Study protocol</td>
<td>Not available</td>
</tr>
<tr>
<td>When will data be available (start and end dates)?</td>
<td>Immediately following publication. No end date.</td>
<td>Beginning at 3 months and ending at 5 years following the article publication.</td>
<td>Beginning at 9 months and ending at 36 months following the article publication.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>With whom?</td>
<td>Anyone who wishes to access the data.</td>
<td>Researchers who provide a methodologically sound proposal.</td>
<td>Investigators whose proposed use of the data has been approved by an independent review committee (“learned intermediary”) identified for this purpose.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>For what types of analyses?</td>
<td>Any purpose</td>
<td>To achieve aims in the approved proposal.</td>
<td>For individual participant data meta-analysis.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>By what mechanism will data be made available?</td>
<td>Data are available indefinitely at (link to be included).</td>
<td>Proposals should be directed to xxx@yyy. To gain access, data requestors will need to sign a data access agreement.</td>
<td>Proposals may be submitted up to 36 months following article publication. After 36 months the data will be available in our University’s data warehouse but without investigator support other than deposited metadata.</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Data are available for 5 years at a third-party website (link to be included).</td>
<td>Information regarding submitting proposals and accessing data may be found at (link to be provided).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1-5. COPYRIGHTS AND CREATIVE COMMONS AT-TRIBUTION NON-COMMERCIAL LICENSE

The author will also be asked to confirm that the material has not been published or submitted for publication elsewhere. All material published in the Journal will be copyrighted by Korean Society of Women Health Nursing. This is an Open Access journal distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

1-6. ELECTRONIC SUBMISSION OF MANUSCRIPT

Authors are requested to submit their papers electronically through the online manuscript management system (http://submit.kjwhn.org). Once a manuscript has been submitted, the order and number of authors should not change. Any inquiries on the submitted manuscript should be made to the editorial office.

Please read all instructions before submitting.

To enter:

• The full title of the article.
• The full names and institutional affiliations of all authors, and the name (with complete address, phone number, and e-mail) to whom correspondence should be directed.
• A running title of no more than 45 characters (including spaces).
• A structured abstract of no more than 250 words, stating purpose, methods, results (including the sample size), and conclusion drawn from the study.
• Up to five keywords (MeSH terms, in alphabetical order).

1-7. COPYRIGHT TRANSFER FORM AND FORM OF CONFLICTS OF INTEREST

Copyright Transfer Agreement form and form of Conflicts of interest should be submitted online at submission. Manuscripts cannot be published without this form.

1-8. ARTICLE PROCESSING CHARGES AND REPRINTS

Upon acceptance, an article processing charge (APC) of 600 USD (approximately 600,000 Korean Won) per article is requested to
the corresponding author. Further information can be found at https://kjwhn.org/authors/processing_charge.php.

1-9. SUBSCRIPTION
The full text is freely available from the website (https://kjwhn.org) according to the Creative Commons License (https://creativecommons.org/licenses/by/4.0/). Print copies can be dispatched to members of the Korean Society of Women Health Nursing and libraries worldwide upon the policy of the Society. Those who wish to receive copies and obtain further information should contact the office of the Society (http://www.women-health-nursing.or.kr).

1-10. CONTACT US
Any inquiries regarding suitability of manuscripts according to the aims and scope of the Journal, submission, review, publication, or journal-related issues are welcomed. Please contact the Editorial Office (kjwhn@kjwhn.org).

For manuscript submission, please visit:
http://submit-kjwhn.org

2. Publication Type and Manuscript Preparation

2-1. WRITING MANUSCRIPTS
All manuscripts must be prepared in accordance with the “Uniform Requirements for Manuscripts Submitted to Biomedical Journals” available at http://www.icmje.org. Manuscripts are accepted for publication with the understanding that their contents, or their essential substance, have not been published elsewhere, except in abstract form or by the express consent of the Editors. Materials taken from other sources must be accompanied by written permissions for reproduction, obtained from the original publisher. Statistical methods should be identified. Priority claims are discouraged. All materials must be written in clear, appropriate English using Microsoft Word (doc or docx). Each page must be numbered at the lower central portion. Number pages consecutively.

2-2. TITLE PAGE
On the title page include title (only capitalize first letter of the first word); subtitle (if any); running title, first name, middle initial, and last names of each author, ORCID number (required for all authors), name of department(s) and institution(s) to which the work should be attributed. The address, phone number, and email of the person responsible for correspondence concerning the manuscripts should be listed separately and clearly labeled as such. List keywords and present authors’ contributions. The journal does not limit first author status to only one person, in cases where equal contribution is evident. Describe contributions, such as the following:

Example 1:
Conceptualization: Piao H, Kim MH; Formal analysis: Piao H, Kim MH, Cui M, Choi G; Writing–original draft: Piao H, Kim MH; Writing–review & editing: Piao H, Choy JH.

Example 2: All work was done by Jeong GH.

Also, describe conflicts of interest, funding, data availability, and acknowledgements (acknowledge only those people and their institutions that have made significant contributions to the study). If applicable, state disclaimers, such as whether manuscript was adapted from thesis/dissertation.

The title page must be submitted separately from the manuscript. A template is available online (https://www.kjwhn.org/authors/authors.php).

2-3. MAIN MANUSCRIPT
Organize the main manuscript in the following order; title, abstract and keywords, summary statement, text, references, tables, figures, and pictures.

Original articles

Abstract and Keywords
An abstract of no more than 250 words should be typed double-spaced on a separate page. It should cover the main factual points, according to the following subheadings: Purpose, Methods, Results, and Conclusion. The abstract should be accompanied by a list of up to five keywords for indexing purposes. Be very specific in your word choice. Use MeSH keywords (https://meshb.nlm.nih.gov/) and present keywords in alphabetical order.

Summary Statement
Following the abstract, describe a summary statement on a separate page according to the following subheadings, with 30 words or less under each subtitle.

• What is already known about this topic?
  Example: The 75 years and older age group, with its complex health needs, is likely to make up an increasing proportion of the workload of accident and emergency strain the coming years.
• What this paper adds

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Example: An alcohol-based surgical hand rub is more effective than a 6-minute surgical hand scrub using 4% chlorhexidine gluconate in terms of microbial counts immediately after scrubbing.

• Implications for practice, education and/or policy

Example: Parents' ability and willingness to participate in their child’s care in the hospital should be thoroughly assessed and their participation needs to be supported.

Main Text

Maximum word count should be within 5,000 words, although less is preferred, excluding tables, figures, and references. The manuscript should be written on A4 sized paper, in Times New Roman 12-point font, double-spaced and have margins of at least one inch (2.54 cm). In general, the text should be organized under the following headings: Introduction, Methods, Results, and Discussion.

Introduction: Clearly state the need of this study and main question or hypothesis of this study. Summarize the literature review or background in the area of the study.

Methods: Present an “Ethics statement” immediately after the heading “Methods” in a boxed format.

Example 1:

Ethics statement: This study was approved by the Institutional Review Board of XXXX University (IRB-201903-0002-01). Informed consent was obtained from the participants.

Example 2:

Ethics statement: Obtaining informed consent was exempted by the Institutional Review Board (IRB) of YYYY University (IRB-201903-0002-01) because there was no sensitive information and the survey was anonymously treated.

Describe the study design, setting and samples, and measurements, procedure, analysis used. Authors are encouraged to describe the study according to the reporting guidelines relevant to their specific research design, such as those outlined by the EQUATOR Network (http://www.equator-network.org/home/) and the United States National Institutes of Health/National Library of Medicine (http://www.nlm.nih.gov/services/research_report_guide.html).

Ensure correct use of the terms sex (when reporting biological factors) and gender (identity, psychosocial or cultural factors), and, unless inappropriate, report the sex or gender of study participants, the sex of animals or cells, and describe the methods used to determine sex or gender. If the study was done involving an exclusive population, for example in only one sex, authors should justify why, except in obvious cases (e.g., ovarian cancer). Authors should define how they determined race or ethnicity and justify their relevance.

Results: Describe the main results in a concise paragraph. This section should be the most descriptive. Note levels of statistical significance and confidence intervals where appropriate.

Discussion: Make discussions based only on the reported results. Describe conclusions and recommendations for further study needed. Do not summarize the study results.

Abbreviations: Use standard abbreviations and units recommended in the publication manual of the to the NLM Style Guide for Authors, Editors, and Publishers (2007), 2nd ed., National Library of Medicine, Bethesda, MD, USA (http://www.nlm.nih.gov/citingmedicine). Non-standard abbreviations should be defined the first time they appear in the text. At first usage, spell out terms and give abbreviations in parentheses. Thereafter, use only abbreviations. It is not necessary to spell out standard units of measure, even at first usage.

Review article

An invited review will be published on an interesting or a new topic. Also submitted reviews are welcomed on any field according to the aims and scope, including systematic review and meta-analysis, scoping reviews, and integrative reviews. The main text is composed of introduction, methods, results, and discussion. There is no limit to the total number of references for a review article. The word count for the main text should be within 8,000 words.

Invited paper

It is a commissioned article for specific purpose only with request base. The topics were discussed between editors and authors before submission. The main text is composed of 3 sections: introduction, text, and conclusion. The total number of references article is recommended to be equal to or less than 30. The word count for the main text should be within 8,000. An abstract is optional and is limited to 250 words.

Issues and perspectives

Issues and Perspectives is usually an invited short article, which deals with the present hot issues in women's health nursing, al-
though not limited to this field. Authors of general interest to nursing and health care are also invited. Its format consists of introduction, main content, and conclusion. Length of the main text is limited to 2,000 words and keywords are limited to 5, preferably in MeSH terms. Number of references is limited to 20 and figures and tables are limited to 10 in total.

**Special essay**
It is a commissioned publication type for the presentation of experiences in nursing or health field. Authors are invited by the editor-in-chief. Topics are discussed upon request. There is no specific format.

**Editorials**
An editorial is usually invited by the Editorial Board. It provides the brief review and comments on pressing developments and events in the field of women’s health nursing. It also may deal with a change in the journal’s style and format and communication with an outside organization or professional. Other various topics shall be dealt by the Editorial Board as deemed appropriate. Divisions in the body of an editorial are not required. The total number of references is recommended to be equal to or less than 10. The word count of the main text should be less than 2,500 words.

**Letter to the editor**
Any opinion or inquiry on a paper published can be addressed to the editor. Title, author, affiliation, main text and the references are the required sections. The total number of references is recommended to be less than 10. The word count of main text should be equal to or less than 1,000 words.

**In reply**
As the reply to “Letter to the editor” its format is same to the “Letter to the editorial” and will be published simultaneously.

### 2-4. References
In the text, references should be cited with Arabic numerals in brackets (e.g. [1]), numbered in the order cited.

In the references section, the references should be numbered in order of appearance in the text and listed in English citation form.

Journal titles should be described in NLM style.

References within the past 5 years are encouraged, and un-published PhD or master’s thesis are not recommended as reference.

Other types of references not described below should follow the NLM Style Guide for Authors, Editors, and Publishers (http://www.nlm.nih.gov/citingmedicine). There are no limits to the number of references. However, limit supporting citations in text to 1-2 per statement. Note the DOI in URL form, if available.

**Journal article with up to six authors:**

**Journal article with more than six authors:**

**Book:**

**Book Chapter:**
Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in

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Table 2. Recommended maximums for articles submitted to the Korean Journal of Women Health Nursing

<table>
<thead>
<tr>
<th>Publication type</th>
<th>Abstract (word count)</th>
<th>Text (word count)†</th>
<th>References</th>
<th>Tables &amp; figures</th>
<th>Invited or unsolicited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original articles</td>
<td>250</td>
<td>5,000</td>
<td>No limit</td>
<td>6</td>
<td>Unsolicited</td>
</tr>
<tr>
<td>Review articles</td>
<td>250</td>
<td>8,000</td>
<td>No limit</td>
<td>6</td>
<td>Invited or unsolicited</td>
</tr>
<tr>
<td>Invited papers</td>
<td>Optional (250)</td>
<td>8,000</td>
<td>30</td>
<td>10</td>
<td>Invited</td>
</tr>
<tr>
<td>Issues and Perspectives</td>
<td>None</td>
<td>2,000</td>
<td>20</td>
<td>10</td>
<td>Invited</td>
</tr>
<tr>
<td>Special essays</td>
<td>None</td>
<td>3,000</td>
<td>20</td>
<td>10</td>
<td>Invited</td>
</tr>
<tr>
<td>Editorials</td>
<td>None</td>
<td>2,500</td>
<td>10</td>
<td>5</td>
<td>Invited</td>
</tr>
<tr>
<td>Letter to the editor</td>
<td>None</td>
<td>1,000</td>
<td>10</td>
<td>3</td>
<td>Unsolicited</td>
</tr>
<tr>
<td>In reply</td>
<td>None</td>
<td>1,000</td>
<td>10</td>
<td>3</td>
<td>Invited</td>
</tr>
</tbody>
</table>

†Maximum number of words excludes the abstract, references, tables, and figure legends
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